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THE CULTIVATOR.

TO IMPROVE THE SOIL AND THE MIND.

THE PROFITS OF THE OLD AND THE NEW HUSBANDRY CONTRASTED.

By the *old husbandry*, we mean the prevailing system of the country, which is progressively deteriorating our lands, lessening their products, and driving our farmers to the west—a system which neither makes the land dry, nor keeps it rich—and which tills, and mows, and pastures the same fields, till the plough land is worn out, the grasses in the meadow land run out, and the pastures overgrown with bushes, noisome weeds and mosses. We call it the EXHAUSTING system—for it not only exhausts the soil, but the purse of the cultivator.

By the *new husbandry*, we mean the system which has enriched Great Britain, and which is now enriching every district of our country where it has been fully adopted—the system of draining, manuring, alternating of clover and roots with grain, &c. and of blending cattle with grain husbandry. We call this the AUGMENTING system—because it augments, or at least preserves, the fertility of the soil, and secures the profits of agricultural labor.

The first business of clearing new farms, is almost necessarily exhausting; because a virgin soil seldom receives manures, and because the farmer has but little leisure to apply them, or room to alternate his crops. Necessity is then the supreme law; but it does not continue to be so after the farm is cleared up and well stocked. Yet the pioneer habit becomes so established by usage, as to be persisted in long after the necessity of the practice of it has ceased. The deterioration is so imperceptible to the cultivator, and his reasoning upon the matter so superficial, that his farm becomes worn out before he is aware of it, or thinks of adopting means of renovating its fertility. In this way most of the lands upon the seaboard, and in the old settled states, were impoverished, until necessity, which first induced the exhausting system, led to the introduction of a better one—the system of augmentation

The new system of husbandry obtained a partial footing among us some forty years ago, through the intelligence and enterprise of distinguished individuals in Pennsylvania, New-York, and Massachusetts, who established agricultural societies in these states, and devoted their time and talents to promote agricultural improvements. In the neighborhoods of the capitals of these states, agricultural improvement has continued to progress, and has spread more or less to different parts of the union; and where it has obtained a footing, it has produced a remarkable change in the pecuniary, moral and intellectual condition of society.

The leading principles in the new system are, as we have already hinted, draining, manuring, alternating crops, the culture of roots and artificial grasses, the substitution of fallow crops for naked fallows, the application of marl, lime and other earthy matters, to improve the mechanical texture and the fertility of the soil, and the blending of tillage and grass husbandry—of cattle and grain. It is affirmed by intelligent practical men, that under this system, more cattle can be fed and fattened, upon the roots and straw of the tillage land, than can be fed and fattened upon a like number of acres, kept permanently in meadow and pasture, leaving the grain as extra nett profit. The new system prevailed long in Flanders, ere it was introduced into Great Britain; and it is perhaps no where now carried to higher perfection than in Scotland. The Scotch excel in their system of draining, and are perhaps behind few in the improvement of their stock, and judicious alternation of their crops. Grass grounds are there almost invariably broken up the second or third year after seeding

In contrasting the profits of the old and new husbandry, we shall avail ourselves, in the first instance, of the practice and calculations of the late Chancellor Livingston, as recorded in the first volume of the transactions of the old agricultural society. They were written in 1796, before root culture, an important branch of the new husbandry, was practised among us. And they rather tend to show the difference between naked fallows and fallow crops, in the profits of the farm, than the difference between the old and new husbandry.

"I will endeavor," says the Chancellor, "to state the profit and loss of two farmers, each cultivating, besides their meadows, one hundred acres of arable land, one in the usual mode of this country, and the other by the intervention of vetches and clover.

Common agriculture 100 *acres.*	*Profits per acre.*
20 acres of Indian corn, 35 bushels, at 4*s.*	£7 0 0
20 oats on corn ground of the preceding year, 20 bushels, at 2*s.*	2 0 0
20 summer fallow,	0 0 0
20 wheat, 10 bushels, at 8*s.*	4 0 0
20 wheat stubble in pasture,	0 2 0
100 acres. Five years yield per acre,	£13 2 0

Expenses per acre for five years.				
Indian corn, ploughing, &c.	£2	0	0	
Oats, twice ploughed,	1	0	0	
Harrowing, and seed, and sowing and harvesting,	0	14	0	
Summer fallow,	1	10	0	
Wheat seed and harvesting,	1	0	0	
Rent on five acres, at 4*s.* a year,	1	0	0	
				7 4 0
Balance of profit on one acre in 5 years, or 5 acres one year,				£5 18 0

Profit on farming by intervention of fallow crops instead of fallowing.	
20 acres Indian corn,	£7 0 0
20 do. vetches, 25 cwt. at 2*s.* 6*d.*	3 2 6
20 do. wheat, 12 bushels,	4 16 0
20 do. clover, 25 cwt. 2*s.* 6*d.*	3 2 6
20 do. the same,	3 2 6
Five years produce of one acre,	£21 3 6

Expenses.				
Indian corn,	£2	0	0	
Ploughing corn ground for vetches,	0	10	0	
Seed 3 bushels and sowing, &c.	0	12	0	
Cutting and making hay,	0	8	0	
Vetch stubble ploughed once for wheat, seed and harvesting,	1	10	0	
12 lbs. clover seed and sowing,	0	15	0	
Mowing clover paid by the second crop,	0	0	0	
Rent 20*s.* or 4*s.* a year,	1	0	0	
				6 15 0
To balance of profit per acre in five years, or on five acres in one,				£14 8 6

"Thus while one farmer makes £1.3.5 a year, per acre, upon his hundred acres, clear of expense, the other makes £2.17.5—the one gets little better than one hundred, while the other gets nearly three hundred a year. In the above statement I have given one farmer credit for two bushels of wheat more than the other, since I am persuaded the vetch crop will improve the ground more than the difference, as the dung given to the corn will not be exhausted by the intervention of an oat crop before the wheat is sown. To this profit should also be added the continued improvement of the crop by the one mode of husbandry, and the continued decrease by the exhausting the land in the other.

"The fallow farmer has no fodder which the rotation farmer does not possess, except the straw of his oats, which we will value at half a ton of hay per acre. He then has from his oats on 20 acres, ten tons.

The fallow crop farmer from 20 acres vetches,	25 *tons.*
From 40 acres clover,	50 do.
	75
Deduct the oat straw,	10
Superiority of fallow crop farmer,	65 tons.

"He can thus winter, at one ton a head, 65 head of cattle more than the fallowing farmer, and as each of these will afford at least six loads of dung, he will be able to carry out 390 loads of dung more than the fallowing farmer, besides that he has one exhausting crop less. It will be easy to see what difference this must make in a few years in the produce of a farm, and how much more it would be than I have rated it at. We often

ask with astonishment, how the British farmer can afford to pay a guinea an acre rent? [a tenth of his produce in tithes, and an enormous tax.] The difficulty is solved if we examine the above statement; since the difference between fallowing, and establishing a rotation of crops, amounts to more than the difference of our rents and theirs. I know there are some stiff soils on which it would be difficult to establish the rotation I mention, but this should be no argument against it where the soil will admit of it, particularly as clover and vetches may be introduced with a certainty of success, even if the ground should be naturally poor, by the addition of only four bushels [one bushel] of gypsum to the acre, which will indeed add 16*s*. [4*s*.] a year to the acreable expense, but it will in all probability, at the same time add nearly a ton to the produce. * * * I would not be considered as confining my observations to vetches, which have not yet been sufficiently tried in this country; potatoes or carrots—or peas sown thin, and cut green for provender, may all answer the purpose, but above all, clover. If this last is the only crop to be brought into the rotation, the system must be changed to the following course: 1st, corn; 2d, barley and clover; 3d and 4th, clover; 5th, wheat and one ploughing; by this means a crop of clover will be substituted for a fallow."

Thus far the extract; to which we would add this suggestion, that as the culture of turnips is now successfully progressing among us, and as the winter wheat crop is becoming so precarious, as to render a resort to the spring varieties of that grain probable, the following course would be better adapted to our husbandry, than the one recommended above: 1st year, corn or potatoes, upon a clover lay, manured with long manure; 2d year, spring wheat with clover seeds; 3d year, clover cut, and followed by turnips; 4th year, barley or oats, with grass seeds; 5th year, meadow; 6th year, pasture. In this way seven crops would be obtained in six years; three of them would be decidedly ameliorating, and but two particularly exhausting—and in five of the seven years the field would afford pasture in autumn. Two objections may be started to this course, first, that the clover cannot be cut in time to get in the turnip crop, in the third year; and, 2d, that sowing grass seeds twice in the course will be too expensive. To the first objection we offer our common practice, which is, to sow our ru'a baga upon a clover ley,—the small southern clover—after the grass has been cut for hay—the white turnip may be put in four weeks later. To the second objection we answer, that the value of the clover ley, to the soil, to say nothing of the feed which the crop will afford to cattle, will twice repay the cost of the seed. We are satisfied, from experience, that it is profitable to sow clover with every crop of small grain, on lands adapted to alternate husbandry.

But to come back to our subject. Our readers have probably all heard of the agricultural school at Hoffwyl, in Switzerland, where science is combined with practice, and where, under M. Fellenburgh, the new system of husbandry has for some time been in successful operation. The celebrated Mr. Brougham visited this school in 1816, and in a report to the British parliament, on education, he gives the results of his examination and inquiry. The Hoffwyl establishment comprises but 214 acres. The annual average profit of the pattern farm alone, for four years, amounted, according to Mr. Brougham's statement, to 886 pounds sterling, or about $4,000, *exclusive of the cattle concern*, which was kept separate.

In Rees' Encyclopædia, we are furnished with numerous comparisons, in detail, between the old and new systems of husbandry, two or three of which we will notice, in abstract. The first comparison is made on a mixed, or grazing, breeding and tillage farm, of 314 acres, in York. Under the old system the nett profits amounted to 313*l*. 10*s*. and under the new system the same lands yielded a nett profit of 596*l*. or near 100 per cent increase. The second case is that of a tillage farm, of 139 acres, in Lincolnshire. Under the old system the profits were 130*l*.—under the new 452*l*.—difference in favor of the latter 322*l*. or 250 per cent. The third statement exhibits the profits of an acre of land, being the medium of several hundred acres, in Yorkshire, for six years. Under the old system the profit was 1*l*. 9*s*. 3*d*.—under the new 17*l*. 6*s*. 9*d*.—an increased gain of more than *eleven hundred* per cent in favor of the latter. The medium profit of an acre in tillage, in England, is 27 to 36 dollars per annum. The nett profit upon Mr. Harris's farm, near Poughkeepsie, which we noticed in our third volume, was more than twenty-three dollars per acre.

These facts will suffice to show the great superiority of the *new*, over the *old* system of farming.

By way of improvement.—The old fashioned farmer is admonished by the foregoing statements, that he must mend his ways if he would prosper in his business,—that he must study, practise and adopt the new system—drain his land,—economise and apply his manures—alternate his crops—cultivate roots and clover, and increase his stock. The new settler should be admonished to adopt a like course, to perserve the fertility of his soil, and to perpetuate its profits to his children.

In travelling westward, we have remarked an astonishing recklessness among farmers in regard to their manures, the primary source of fertility. But few cattle yards are cleaned in the spring, and many not at all; and we are told of a *man*,—for we cannot call him a *farmer*—who chuckled mightily among his neighbors, alledging that he had *taken in* the buyer of his farm, inasmuch as he would have to remove the barn, *on account of the manure which surrounded it!* These remarks apply particularly to the country east of Onondaga. West of that the great wheat farmers sometimes take a more summary way to disencumber their barns and yards—they cart their straw to the field and *burn it!* This is no fiction. How long will it take, under this system, to bring down the fertility of the prolific west, to the standard of worn out lands!

ROHAN POTATO.

The readers of the Cultivator may remember our former notices of this vegetable, as a species of uncommon size and productiveness. We obtained two tubers from France last fall, and the kindness of an esteemed friend, J. A. Thompson, Esq. of Catskill, enabled us to increase our seed to twelve pounds. We divided the tubers into sets of two eyes each, and planted one set in a hill, four feet apart, in a piece of ground much shaded, and in rather low condition. We dug, weighed and measured the crop on the 28th September. It weighed 525 pounds, and measured nine bushels—35 of the largest tubers filling a bushel basket. We have hardly been able yet to decide upon the quality of this potato, having barely tasted of one; yet we deem it equal to the English white, orange or the common peach blossom variety, which are the kinds commonly cultivated. Others, however, in whose opinion we place great confidence, do not hesitate to pronounce them superior for the table. They are undoubtedly the most productive variety of the potato we have ever met with.

While on the subject of the potato, we cannot but express our surprise, that in our journeyings we seldom have good potatoes set before us. They are mostly yellow fleshed, often clammy, and sometimes strong and unpalatable. Our farmers look more to the yield than to the quality. Of the better kinds known here, we may enumerate the following:

1. *Kidneys*, or *foxites*, white flesh, rather small, and seemingly deteriorating, as an old variety.
2. *Pink eyes*, white flesh, rather kidney shaped, yield well, and are yet in their prime.
3. *St. Helena*, very similar in flesh, shape, color and quality to the foregoing, without the pink eyes, or blotches—to us a new variety.
4. *Early kidneys*—real kidney shaped, smooth, white and of fair size—the best early variety.
5. *Mercer*—well known and deservedly liked.
6. *Sault St. Maria*—the true kind large, long, dark colored and good.
7. *Liverpool blues*—colored, good size and productive. Boil white, and may be placed in the first class for the table.

The foregoing we esteem the best kinds. There may be other kinds equally good, and some that we have enumerated may be known by other names. The *forty-fold* has been highly commended for its productiveness and good qualities, with what truth we will not venture to say.

EXPERIMENT IN HARVESTING CORN.

We think it has been well established, in repeated experiments, that the old, and in many cases present practice, of topping corn, very considerably diminishes the quantity of grain, a result which vegetable physiologists had long ago proclaimed. Desirous of knowing how far the product would be diminished by cutting up the entire crop, at the ordinary period of topping, we invited the public attention to the subject in our March number, and have subsequently instituted a small experiment, the result of which we give below. We do not mean to intimate that this experiment is conclusive, though the result is such as we expected; and we therefore again invite gentlemen who may have experimented in the matter, to forward us the results, in order the better to arrive at a correct conclusion, in a matter which is certainly of high interest to the farmer; for if other trials justify our conclusions, an immense loss is annually sustained by the practice of topping corn.

On the 16th of September we selected thirty-two hills of corn,—being a good sample of two acres—in four contiguous rows, eight hills in a row, and topped them in the old way.

We selected thirty-two hills in like manner, adjoining the preceding, which we cut at the roots, and stooked, at the same time.

And we left thirty-two hills adjoining the last, to ripen on the entire stalk.

The three parcels were apparently alike.

On the 9th of October, we picked, husked and weighed each parcel separately. The weight, and number of ears, of all descriptions, were as follows:

No. 1 standing,	weighed 62¾,	and had 139 ears.	
No. 2 cut up,	" 63¼,	" 145	"
No. 3 topped,	" 55½,	" 135	"

We then equalised the number of ears, by taking four from No. 1, and ten from No. 2, leaving 135 in each. The weight was then as follows:

No. 1 standing,.....	61¼ pounds.
No. 2 cut up,.....	60¼ "
No. 3 topped,.....	55½ "

The field having been planted precisely three feet distant between the rows, and about two and a half feet the other way, would average 5,808 hills on the acre. The acre would, therefore, according to the above results, give the following product in pounds:

The standing corn,..... 10,616 pounds.
The cut up do. ..... 10,436 "
The topped do. ..... 9,982 "

It follows, that the loss by topping an acre would be 634 pounds; do. by cutting up 181 pounds; and that cutting up has an advantage over topping of 453 pounds, independent of the important gain in the forage.

We then shelled a bushel, which required 78 pounds in the ear,—the grain weighing 53 pounds and the cobs 25 pounds. When perfectly dry the corn weighs 60 to 62 pounds. Dividing the total pounds per acre by 78,—the number of pounds of ears required for a bushel of shelled corn. —the product in bushels, under the different modes of management, would be as follows:

Standing corn,..... 136 bushels 8 pounds.
Cut up " ..... 133 " 62 "
Topped " ..... 127 " 76 "

Deduct ten per cent for shrinkage, on drying to a merchantable condition, and the product would then be as follows, omitting fractions:

The standing corn, per acre..... 122 bushels.
The cut of do. " ..... 120 "
The topped do. " ..... 114 "

That our southern patrons may understand the cause of this great product, it will be only necessary for us to state, that in our mode of planting we produce on an acre, if there are no deficiencies, as there need not be if plenty of seed is put in, 23,232 stalks, which on the assumption that each stalks produces an ear, and that the ears average a gill each, which is much under the mark with the Dutton corn, the product would be about 90 bushels. The southern corn, at four and a half feet distance, two stalks in a hill, would give only about 4,300 stalks; now supposing this to be the Baden variety, giving four ears on a stalk, the total number of ears would be but 17,200 on the acre, or about 6,000 ears, or gills, less than our Dutton crop, with one ear on a stalk.

OLDEN TIMES—1796.

CLEANLINESS INCULCATED.

The next article we shall notice in the memoirs of the old agricultural society, is a letter from Dr. S. L. Mitchell, to Rev. Dr. H. Muhlenburgh, on azote and its compounds, as they operate on plants as food, and on animals as poison.

This is a philosophical essay, calculated to impress upon the agriculturist and others, the great importance of cleanliness about their dwellings and out-buildings; and to demonstrate, that the filth which is suffered to accumulate in these places, while it is highly deleterious to animal health, abounding as it generally does in azote, is admirably calculated to feed and nourish farm crops—that plants have the power of destroying pestilential fluids, and of rendering the atmosphere which has been contaminated by them, healthy. What was then in a manner speculation, in these matters, has since become established by chemical demonstration. Plants and animals reciprocally benefit each other in their influence upon the atmosphere. The following extract from this paper is particularly worthy the consideration of house-keepers:—

"Septic substances, (substances containing azote or nitrogen,) the offal of slaughtered animals, the refuse of house-keeping, are, when mingled in due quantity with the soil, justly ranked among the best fertilizers. The impregnation of land about houses and barns long occupied with such materials, is the acknowledged cause of such superior productiveness.—While these manures are mixed with earth in such quantity as to promote and not overpower vegetable life, their noxious effluvia are repressed, or their virulence counteracted, by the mediation of plants. The instrumentality of these classes of animated beings, [i. e. plants,] seems to be intended to keep the great balance of nature in equipoise, and prevent either scale being overloaded with materials destructive of animal life.—But it nevertheless sometimes happens, that in cellars, and around country dwellings, in pig-styes and cow-pens near the house, there are accumulated great quantities of excrementitious and corrupting substances, which, if seasonably carted away, tend eminently to fertilize the fields, and promote the growth of vegetables; while, at the same time, by remaining, they render the house foul and unhealthy, by the extrication of septic vapors. Neatness and elegance are thus found to be as conducive to good health as to good husbandry. The effluvia from the neighborhood of dirty cottages and mean huts, in the country, are of a like nature with pestilential fumes which insinuate themselves into foul and unventilated tenements in cities; and the reason is apparent; wherefore, as penury is generally associated with ignorance and nastiness, and often with indolence, these distempers rage with such tremendous violence among the poor.

"When I see a farmer permit such unwholesome substances to collect around his habitation, I cannot help reflecting on the danger which awaits him. The manure, which ought to have been carried away and spread over his lots, serves, as it lays, but to make his family sickly, to disable his laborers, and lead him to the dubious and expensive routine of physic; and, as in common life, as well as in logic, one blunder leads to another, the want of crops, and the consequent failure of income, drive him to mortgages, judgments and executions, those fatal expedients of law.

"In like manner, do I regret the indiscretion of tenants contending in our cities, which of them shall obtain, at a high rent, *a pestilential stand for business!* With the view of bettering themselves, they venture, at all hazards, amidst the poisonous exhalations of the neighborhood. By and bye, they are visited by distempers; and as they are honest and sober citizens, having no uneasy conscience to reproach them for their sins, they piously consider the affliction as a monition from heaven to try their virtue. Their sense of constancy and firmness forbids them to fly from the scourge of the Lord, and thus they religiously stick to the infected spot! What is the true interpretation of such conduct, but that both the farmer and the trader, obstinately persisting in the means of self-destruction, are guilty of a sort of suicide?"

Septic manures, or manures containing animal matter, or nitrogen, the doctor intimates, and as has since been fully established, constitute the best dressings for wheat, that grain containing nitrogen; indeed this seems to be a necessary constituent in the soil, to produce good wheat. We long ago broached the opinion, that the absence of lime, and the exhaustion of animal matter, in the soils of New-England, and other primitive formations, was the cause that good wheat could not be well grown in those districts. In their primitive state, a partial accumulation of animal matters had taken place in those formations; and the ashes produced by the burning of fallows, afforded the requisite quantity of alkali, containing nitrogen, to sustain one or more wheat crops upon newly cleared land. But those supplies being soon exhausted, *good wheat* is no longer produced, except at long intervals, although, with the aid of stable dung, *great straw* may be grown. Hence the deterioration of this grain in all the transition formation from Long Island Sound to Canada, through the borders of New-York, Connecticut and Massachusetts, and the west section of Vermont.

"Cabbages putrifying in a cellar," says the doctor, "have been known to render a house unhealthy. Corrupted coffee has been charged with emitting pestilence enough to desolate a neighborhood. The like may happen from rotten flax, hemp, onions, potatoes, and in short, all other plants which have derived septon (nitrogen) from the soil in which they grew."

GREAT CORN CROPS.

This volume contains an account of the great corn crops raised about 45 years ago, by Mr. Stevens, of Hoboken, and Mr. Ludlow, of Westchester, on a bet of 50 guineas. Mr. Stevens produced 118 bushels and two quarts on an acre; and Mr. Ludlow 98 bushels and eight quarts.—Mr. Stevens gave his acre 700 horse cart loads of street manure, planted in double rows 5½ feet asunder, and dibbled in his seed, with intervals of seven inches, in quincunx form. Mr. Ludlow dressed with 200 loads of street manure. These crops were deemed incredibly large then, but they are now frequently equalled in magnitude. These experiments show, that Indian corn is not likely to be injured by over-manuring; and should convince all slovenly farmers, who *summer yard*, and thereby waste half of their manure, that if they would apply it in the spring to their corn crop, they might greatly augment the product, and facilitate its ripening.

ON RAISING POTATOES.

Our readers have all heard of Webster's Spelling-Book, and Webster's Dictionary, but very few, we apprehend, have heard of Webster's rules for raising potatoes. They are, however, found in this volume, in a letter from Noah Webster to Secretary Mitchell; and as they are sound rules we transcribe their pith.

1. The seed potatoes should be those of full growth.
2. Cuttings produce more than whole potatoes.
3. Potatoes will not come to perfection without the sun. Therefore nothing is so prejudicial as to plant them too thick, especially on a rich soil.
4. The cuttings, in drills, where the land is light, will answer well at nine inches distance.

ON MANAGING CALVES.

Lemuel Clift, of Dutchess, gives his mode of managing calves. It consists in feeding on new milk two weeks, and then feed with flax-seed tea, mixed with skimmed milk, in equal portions—a gill of flax-seed boiled in two quarts of water, being a mess for 24 hours.

HOUSEHOLD ECONOMY.

A great deal may be saved in a family, and order and comfort promoted, by the mistress knowing *how things should be done*, though she may not be required, in all cases, *to do them herself*. And a vast deal is wasted, and many families ultimately reduced to want, for lack of economy in the household, and of intelligence and good supervision on the part of the mistress. The duty of women is to manage well the affairs of the household; and to qualify them for the performance of this duty, *girls* should learn what they ought to practise when they become *women*. Nothing is so great an accomplishment in a young married female—nothing of which a young husband is so proud—and certainly very few things so conducive to the welfare and happiness of the married life—as a familiar acquaintance with domestic duties, and a cheerful willingness to perform them with fidelity. Though we do not intend to assume the office of instructor in

these domestic duties, we are willing, occasionally, to act the part of an auxiliary. With this view, we have published, with the aid of our correspondents, ample instructions for the economical fabrication of Indian corn into human food, in a great variety of forms. As bread is virtually the "staff of life,"—as good bread is more healthy and nutritious, and withal far more palatable than bad bread, we shall here offer some further remarks upon this subject.

TO MAKE GOOD HOUSEHOLD BREAD.

Mix four ounces of salt, three quarts of water, a pint of yeast, and a peck of flour—seconds is more wholesome than superfine, though less white—in a trough; when properly fermented, knead and divide it into loaves, and bake till done. 56 lbs. flour will weigh 69½ lbs. when baked.

TO MAKE POTATO BREAD.

Wash and boil good sized potatoes, peel and mash them fine, or pass them through a sieve; add two or three parts of flour to one of potatoes, and a little more yeast than usual. Knead well, and allow the dough to stand a proper time to ferment, and bake. The bread is as palatable to many, and as wholesome, as wheaten bread, and effects a considerable saving of flour, which may be an object in scarce times.

TO MAKE DR. DARWIN'S POTATO BREAD.

Wash and grate 8 lbs. raw potatoes into cold water, stir it, and when the starch has subsided, mix the starch with 8 lbs. of boiled potatoes, knead and bake. This, says the doctor, will make as good bread as that from wheaten flour.

MR. PARMENTIER'S POTATO BREAD.

Mr. Parmentier found, from a variety of experiments, that good bread might be made of equal quantities of flour and potato meal. He also obtained well fermented bread, of a good color and taste, from a mixture of raw potato pulp and wheaten meal, with the addition of yeast and salt.

TO MAKE RICE BREAD.

Boil three-fourths of wheaten flour and one-fourth of rice separately. The rice should be boiled to a pulp, the water squeezed out, the flour incorporated, and the dough then treated in the same manner as that of common bread. Rice gains much more than wheat by baking; 32 oz. of flour and 6 oz. of rice, weighed, when baked 55½ oz. showing a gain of 17½ oz. or nearly 50 per cent. The bread is wholesome, and rice is now as cheap as flour. Rice has been successfully tried, in the same proportion, with barley meal. Nine-tenths flour, and one-tenth rice, made like bread, with the exception of using yeast and salt, produced a finer crust in pastry than flour alone. Rice bread keeps longer moist than pure wheaten bread, and is better the second day than the first. Good flour imbibes one-half its weight of water, without letting it go again; flour of inferior quality does not imbibe so much. Seven pounds of flour will make nine pounds of bread. Half a pound of good rice, steamed in a little more than a quart of water, till it is quite dry and soft, gains two pounds, that is, four-fifths in weight.

TO MAKE PUMPKIN BREAD.

Boil a good pumpkin in water, till it is quite thick, pass it through a sieve, and mix flour so as to make a good dough. This makes an excellent bread. The proportion is increased at least one-fourth, and it keeps good a length of time.

MR. DOSSIE'S DIRECTIONS.

To make *good* bread, take of fine flour six pounds; of water, moderately warm, but not hot, two pints and a half; of liquid yeast, eight spoonsful; and of salt, two ounces. Put a pint of the warm water to the yeast, and mix them well, by beating them together with a whisk. Let the salt be put to the remaining part of the water, and stirred till completely dissolved. Then put both quantities of the fluid gradually to the flour, and knead the mass well, till the whole is properly mixed. The dough must stand four or five hours in a warm place, to rise, and then be baked without delay. When properly managed and baked, the above ingredients will have lost about one pound two ounces in weight, so that the loaf will weigh seven pounds twelve ounces.

FRENCH MODE.

Put a pint of milk to three quarts of water, in winter, scalding hot, in summer, blood warm; add salt, and a pint and a half a good yeast. Pour the yeast into the milk and water, and break in about five ounces of butter. Work it well till it is dissolved. Then beat up two eggs in a basin and stir them in. Mix about a peck and a half of flour with the liquor, and in winter make the dough pretty stiff, but more slack in summer; mix it well, and the less it is worked the better. Let it lie to rise while the oven is heating. When the loaves have lain in a quick oven about a quarter of an hour, turn them on the other side for about a quarter of an hour longer.

Wheat and Indian, rye and Indian, and *wheat and rye bread,* are made in the ordinary way. The New-England *rye and Indian,* generally contains one part of rye and two of Indian. The other mixtures may be varied at pleasure. Bread containing Indian meal requires a hotter oven, and is longer in baking, than other bread.

GROWN WHEAT,

According to Davy, is apt to contain a small quantity of prussic acid, highly deleterious. He directs to dry the grain in an oven; this stops the progress of germination. With flour made of such damaged wheat, mix one-half of good sound flour; and for each pound of the damaged flour, mix from 30 to 40 grains of the common carbonate of magnesia, i. e. uncalcined magnesia. A like quantity of common whiting may be substituted, 30 or 40 grains, for the magnesia; or for want of both, 25 grains of pot or pearlash, or a tea-spoonful of strong ley.

Dyspeptic Bread is made from flour not bolted, containing the bran, in the ordinary way.

GENERAL REMARKS.

New baked bread contains a large portion of indigestible paste, which may be rendered less unwholesome by allowing it to stand a day, or by toasting it. Stale bread, in every respect, deserves the preference to that which is newly baked; and persons troubled with flatulency, cramp of the stomach or indigestion, should abstain from new bread, and particularly from hot rolls.—*Willich.*

RUSSIAN MODE OF MAKING BUTTER.

The milk is simmered fifteen minutes over the fire, when it comes from the cow, and then churned. This process produces butter immediately, and in quantity far superior to that made in the ordinary way, from milk that has undergone vinous fermentation; and in addition to its superior flavor, it will preserve its qualities much longer. Another advantage is, that the milk being left sweet, is possessed of almost the same value for ordinary purposes, and more healthy, as the scalding destroys whatever animalculæ it might have contained. In winter, place the milk vessel in a kettle of scalding water.—*McKenzie.*

The Italian Spring Wheat, has received high commendation from N. Jersey, Pennsylvania, Maryland, and Virginia, and wherever it has been sent, and is increasing in demand. This fact affords the best demonstration of the utility of agricultural journals. This wheat is of very recent introduction, and was first publicly noticed about a year ago in the Cultivator, in a letter from Mr. Hathaway to the Conductor. Six months has served to introduce it into the middle and some of the northern states; and it has every where been found to be a valuable accession to our farm products. We state, for the benefit of those who are anxious to purchase seed, that it may be had of John Johnson & Son, commission merchants, No. 2 South-street, New-York, or on application to Ph. Van Rensselaer, Cultivator Office, Albany.

A new use for Apples.—That apples will fatten pigs, cattle and children, has got to be an old story. It is now known that they will fatten poultry. Geese and ducks feed upon them, with avidity, when broken, and dung hill fowls also, and will peck and eat the mellow apples which fall from the tree. We have several kinds of early apples which the fowls attack as soon as they fall, and our ducks swallow our Siberian crabs entire. Now if apples will make pork and beef, and thousands can attest to this fact, why will they not make fat the goose, the duck and the chicken? All that is required is that they should be mellow or broken, or perhaps it would be better to have them boiled.

ADDRESS,

DELIVERED BEFORE THE BERKSHIRE AGRICULTURAL SOCIETY, AT THEIR TWENTY-SEVENTH ANNIVERSARY, OCTOBER 5, 1837, BY J. BUEL.

Mr. President and Gentlemen of the Society:

In compliance with your invitation, I propose to offer to this assembly some remarks on the duties which devolve upon the farmer; and to discuss some of the prominent means by which those duties may be usefully and profitably performed.

Providence has imposed upon all, the obligation of providing for the wants and comforts of themselves and their households. These wants and comforts are not limited to mere food and clothing: they embrace the mind and the habits of life—intelligence, industry, frugality, benevolence. The lively exercise of these virtues, if not always necessary to prevent want, are the surest means of promoting comfort, and of securing to our children the substantial enjoyments of life.

Though there are many ways and devices by which men endeavor to obtain wealth and happiness, there are few employments in which these are attained with so much certainty, or which are more conducive to health, to usefulness and manly independence—few which apparently better fulfil the beneficent designs of the Creator—than that assigned to our first parents—the cultivation of the earth. It has, to be sure, like all other avocations, its cares and its toils—its thorns—yet the wise and the good, engaged in its pursuits, seldom fail to draw from these, lessons of wholesome instruction:—to them, every thorn has its rose. Nor does farming afford that prospect of rapid gain, which some other employments offer to our cupidity; yet neither does it, on the other hand, involve the risks, to fortune and to morals, with which the schemers and speculators of the day are ever environed. It offers a sure and substantial source of gain and of usefuluess, far better for the individual and the community,

than fortunes made in a day, and lost in a night—made by trick, and dissipated by folly. Rural life is exempt from a crowd of evils, of rivalships and jealousies, which often cloud and embitter the lives of men in other professions.

"The husbandman should hate no one, for he should dread no rivals. If his neighbor's field is more productive than his own, he borrows a useful lesson." If his own field is the most productive, he has the satisfaction of knowing that he is teaching and benefitting his neighbor by his example. He learns to consider his own welfare as intimately identified with the prosperity of all around him. A gentleman highly distinguished for fortune, talents and usefulness—who participated largely in the honors and duties of public life, and who, by his example in rural improvement, and his writings, mainly contributed to raise the agricultural character of his district to a state of perfection excelling that of any other district in the Union—I allude to the late Chancellor Livingston—has said, with much truth, that "If happiness is to be found upon earth, it must certainly be sought in the indulgence of those benign emotions" which are the reward of rural cares and rural labors. "As Cicero," he continues, "sums up all human knowledge in the character of a perfect orator, so we might, with much more propriety, claim every virtue, and embrace every science, when we draw that of an accomplished farmer. He is the legislator of an extensive family, and not only men, but the brute creation, are subject to his laws. He is the magistrate who expounds and carries these laws into execution. He is the physician who heals their wounds, and cures the diseases of his various patients. He is the divine, who studies and enforces the precepts of reason. And he is the grand almoner of the Creator, who is continually dispensing his bounties, not only to his fellow mortals, but to the fowls of the air, and the beasts of the field."

With a conviction of these truths upon his mind, no farmer should repine at his lot, or envy the specious or substantial prosperity of his neighbor; but aim contentedly to fulfil with fidelity, the high duties imposed upon him as a cultivator of the soil.

The condition of the agriculturist imposes upon him other duties than those which regard the welfare of his household. He is to provide for the subsistence of the great national family. Most of the necessaries of civilized life are drawn from the soil, the supervision and management of which he has taken upon himself. Our population is divided into professions and trades, to each of which belong particular offices; and the welfare of the whole depends upon each fulfilling, with fidelity, its respective relative duties. A mutual dependence and obligation exists among the various classes, which can neither be neglected or slighted by one class, without serious detriment to the whole. The obligation is particularly mandatory upon the tiller of the soil; for, upon his labors, the other classes mainly depend, for many of the absolute necessaries of civilized life. If the farmer is industrious and intelligent—for intelligence serves greatly to abridge labor, and to multiply its products and its profits—the bounties of the soil, with the blessings of Providence, will be abundant, and plenty will spring up in every corner of the land. But the soil will withhold its treasures in proportion as ignorance prevails, or as rural labor relaxes its efforts, and the consequent suffering is felt, with the certainty and force of an electric shock, through the whole social circle.—We want nothing but the melancholy experience of the last year to persuade us of this truth.

Society is dependent upon the farmer, not only for the necessaries, but indirectly for many of the refinements of life. Agriculture furnishes most of the labor which creates our wealth; it provides most of the raw materials for the manufacturing arts; it freights the bark of commerce; and, by receiving in exchange the fabrics of the one, and the commodities of the other, it sustains and enriches both.

He who does not appreciate his social obligations, or knowing, neglects to fulfil them, and lives only for himself, perverts his noblest faculties, and lives and dies a stranger to the best feelings which dignify human nature.

Our agriculturists are also specially charged with the guardianship of our freedom. They constitute the fountains of political power, and are the conservators of the whig principles which made us an independent nation. If the fountains are impure, the stream of power will be defiled and corrupt. The farmers compose the great body of our population, and must ever, while we remain a free people, control the destinies of the republic, and give the impress to our national character Their republican and independent bearing—their sober good sense, unostentatious habits, and love of order, must protect us alike from the wily encroachments of ambition, the enervating and corrupting influence of wealth, and the tumult and violence of the mob. They are to a free state, what the main spring is to the watch—the great moving and regulating power. Rome remained free while her middling classes retained a controlling influence in her public affairs, and she sunk to despotism, in proportion as this barrier between her patricians and her plebeians, was broken down and destroyed. "The corruption of Rome began," says Sismondi, "from the time that the middle class ceased to impress its own peculiar character on the whole nation; this corruption increased in proportion as the intermediate ranks disappeared; it was carried to its highest pitch, when the whole empire consisted of men of enormous wealth and populace. It is in fact," he continues to remark, "in the middle classes, that the domestic virtues—economy, forethought, and the spirit of association—mainly reside. It is in them, that a certain degree of energy is incessantly called into operation, either as a means of rising, or of keeping the position already acquired. It is in them alone that the sentiment of social equality, on which all justice is based, can be kept alive. Grandeur isolates a man; vast opulence accustoms each individual to look upon himself as a distinct power. He feels that he can exist independently of his country; that his elevation, or his fall, may be distinct; and, ere long the servile dependents by whom a man who spends as much as a petty state, is sure to be surrounded, succeed in persuading him, that his pleasures, his pains, nay, his slightest caprices, are more important than the thousands of families, whose means of subsistence he engrosses."

In view of the high duties and responsibilities which devolve upon the farmer, as a parent, a tiller of the soil, and a watchman on the citadel of freedom, it becomes us to inquire, what are the best means of enabling him to act well his part on the theatre of life, in the several capacities that have been enumerated.

The duties of a parent to his children may be comprised in a brief sentence:—teach them what good men in every age, as well as divine inspiration, have defined to be the cardinal virtues—LOVE TO GOD AND GOOD WILL TO MAN—teach them to be industrious, to be frugal, to be temperate, to be humble, to be honest, to be kind hearted—and TEACH THEM BY EXAMPLE.

Health is among the first blessings of life, and the prudent man will always endeavor to secure it for himself and his family. This may be promoted by many little attentions which some do not know how to value, and which others, knowing, shamefully disregard.

Temperance, in all our animal indulgences, as well as in our passions, is particularly promotive of health. The human frame is so delicately and wonderfully made, that any excess or violence which may impair the functions of one part, may cause irremediable injury to the whole system.

The air we breathe, though essential to life, becomes vitiated, and prejudicial to health, by respiration, by putrifying vegetable and animal matters, by stagnant waters, and by a state of rest. Hence our dwellings should be located in dry and healthy situations, our apartments should be roomy, kept in a cleanly order, and frequently aired; every species of putrifying substance should be removed from our house-yards and cellars, and the latter kept dry, by drains, if necessary, and often ventilated.

The offices of the skin are all important to health. Lavossier has shown, that upon the lowest estimate, the skin is endowed with the important charge of removing from the system, by the process of insensible perspiration, about twenty ounces of waste matter in every twenty-four hours, while the maximum has been found to amount to five pounds a day. These excretions are greater in amount, Dr. Combe adds, than the united excretions of the bowels and kidneys. These facts admonish us, that if the functions of the skin become suspended, by a disregard to cleanliness, by too great indulgence in sedentary habits, by exposure to sudden transitions of temperature, or other causes, and the impurities which are ordinarily thrown off by this channel, are suffered to remain and accumulate in the system, health must be impaired, and life endangered. So important is a clean skin considered in the economy of health, that frequent ablutions have been enjoined as a religious duty among many eastern nations. A like attention, among us, to keep in wholesome exercise, the important functions of the skin, cannot fail of being highly conducive to health.

Vegetation purifies the air, and health, as well as beauty and comfort, are essentially promoted, by surrounding our dwellings with fruit and shade trees, and ornamental plants. The splendid elm which stands on yonder common, is alike the ornament and pride of the town. What a lesson of instruction does this afford! Every man may plant an elm and a maple—an apple tree and a vine—a lilac and a rose-bush, in a leisure hour, and may live to enjoy their shade, their fruit, and their fragrance; or should Providence otherwise ordain, may leave them as a grateful inheritance to his posterity. Our fathers planted for us, and we should requite the obligation, by planting for our children.

Most of the diseases which afflict our species, may be traced to impure air, obstructed perspiration, or intemperate indulgences.

Another source of high, but rational gratification to the farmer, is the garden. This may be made to administer largely to the variety of his viands, the subsistence and health of his family, and the recreation and improvement of the mind, without materially abstracting from the labors of the farm. So strong is my conviction of the economy and salutary influence of a well cultivated garden, that, when I chance to see one in travelling abroad, I involuntarily ascribe to its occupants, economy, good taste and domestic enjoyment.

The best preventive of gossip and tale bearing, the common recreation of the idle and the ignorant, and the bane of those good feelings and kind offices which sweeten and augment the pleasures of good neighborhood, is to inculcate, in early life, a taste for useful reading. Books remind us of our duties, instruct us in our business, and afford useful employment

and recreation for the mind in hours of rest or of leisure; and when the habit of reading is once acquired, its pleasures and advantages become more and more perceptible and enticing, as we advance in useful knowledge. Those who employ their time in their own business, seldom find leisure or disposition officiously to intermeddle in the private concerns of their neighbors. But the mind is as liable to disease as the body, and a diseased mind is far more prejudicial to character and usefulness, than a sickly body. Evil communications corrupt good manners; and bad books, or useless books, are as injurious to the mind and manners, as bad companions are, or as impure air, or obstructed perspiration are to the body. The adage teaches, that a man is known by the company he keeps, and the maxim is true, applied to books as well as men.

Having discussed the affairs of the family, let us go now to the farm:—For after all, our capacity for providing suitably for ourselves and families, and of becoming useful to others, will depend, in no small measure, upon the extent of our pecuniary means, and these means are to be acquired by the profits of our labors upon the farm.

I would premise in the outset, that the business of agriculture has not kept pace with the other useful arts, in the march of improvement, and that it requires all our exertion and enterprise to overtake the spirit of the age. In the other arts of productive labor, the improvements of the last fifty years have been greater in amount than during the preceding century. No man prospers in the mechanic or manufacturing arts, at this day, who treads in the footsteps of his ancestors. By reason of the application of science, and the multiplication and great improvement of labour saving machines, old practices have been superseded by new and better ones—all has there been changed—all improved. A useful discovery in those arts is no sooner made in one country, or in one district, than a knowledge of it is disseminated, by means of the press, through every civilized land, almost with the rapidity of the wind, and it becomes known and adopted wherever it can be useful. But in husbandry, the case has been different. We have, to a ruinous extent, in many parts of the country, persevered in the practices of our fathers, which, though adapted to their time, and the circumstances of a newly settled country, are ill suited to an exhausted soil, or to the present age of improvement. We, too, must call science and the press to our aid, if we would successfully compete in the business of farming, with the well cultivated countries of the old continent, or the highly improved districts of the new one. The agriculture of England has doubled its products in the last sixty years, and the agricultural productions of Scotland, have been more than quadrupled in the same period. In France, men of profound science, have successfully devoted their talents to the improvement of the soil, and the government has efficiently aided their efforts, by the establishment of schools of practical and scientific instruction in husbandry, and by pecuniary aids to her agricultural societies. There, the soil has been improving under the *new* system of husbandry: here, the soil has been deteriorating under the *old* system. The lands of Flanders have been preserved in unimpaired fertility six centuries, and those of China, for more than two thousand years Providence has provided for us too abundant means for perpetuating the fertility of our soils, and has endowed us with capacities of applying them to advantage. We have received the talent. If we hide it, or do not put it at interest, the master will assuredly take from us that which we have, and give it to him who has already much. But the spirit of agricultural improvement *is* abroad in our land. The young farmer, in particular, feels its vivifying influence. It has already done much, and with the aid of agricultural societies, and of agricultural periodicals, which are increasing in numbers and usefulness, its benign influence will soon be manifest in every department of husbandry, and in every section of our country. We have the strength and enterprise of a young nation; and we possess advantages, and enjoy privileges, unknown to any other agricultural people upon the globe. It becomes us, then, to call promptly to our aid, the lights of science, and the diffusive influence of the press, that we may realize the high destinies seemingly allotted to us by a kind Providence.

Allow me to make a farther digression, to speak of a means of improving our husbandry, which is too much neglected, and too often contemned and ridiculed. I allude to what is sometimes, in derision, termed *Book Farming*, but which in reality offers the most substantial facilities to improvement, and the acquisition of wealth. Let us inquire what this book farming is.

A German, by means of study and observation, aided by a long course of practical experience in husbandry, has been able to ascertain the degree of exhaustion in fertility which soils ordinarily undergo, from the growth of common grain crops—and how much their fertility is increased by given quantities of manure, and by pasture—thus teaching how to maintain, or to increase, the fertility of the soil, and consequently its products and its profits, from the resources of the farm.

Other men have been assiduously engaged for years, in studying, and have satisfactorily ascertained, the laws by which heat, air and water, are made to exert their best agency in preparing the food, and accelerating the growth and maturity of plants—and have published directions how to derive the highest advantage from these primary agents of nutrition.

And others have invented new and improved implements and machinery, calculated to relieve agricultural labor of half its toils.

A farmer in Ohio, raises fifteen hundred bushels of Swedish turneps on an acre of ground, enough to feed and fatten ten bullocks seventy-five days. A farmer in Massachusetts, by a new mode of managing his corn crop, has realized a nett profit of $150, on little more than an acre of land, while his neighbors, in the same season, and in adjoining fields, have not been remunerated, in their crop, for the expense of culture. A farmer in New-York, has proved by experiment, that by a new process of making hay, he can save ten per cent in weight, something in labor, and other ten per cent in the quality of his forage. Another farmer of my acquaintance, has cultivated twenty acres of Indian corn, and eight acres of beans the present season;—the former, estimated to average forty bushels the acre, and the latter giving more than an ordinary yield—without employing a plough, or a hand hoe, in the planting or culture—the whole work having been performed with the drill barrow and cultivator, implements of modern introduction, thus economising from one-half to two-thirds of the labor ordinarily bestowed.

These are all matters of recent record, but as they happen to be *printed*, they very properly fall under the denomination of *Book Farming*.—But are they, on this account, less true, or is the information they contain less useful in your practice? If a neighbor makes a palpable improvement, by which he doubles the value of his labor, you readily avail yourselves of his discovery, though you do it by stealth. Through the means of agricultural publications, the entire farming community stand in the relation to you of neighbors—you become acquainted with all their improvements, and are enabled to profit by their skill and science. I might detain you for hours with details of improvements in husbandry, which are essential and accessible to the farmer. Hundreds of men of profound science, and thousands of the best practical farmers, in this and other countries, are engaged in improving agriculture—in making two, three and four blades of grass, and two, three and four bushels of grain grow, where but one blade, or one bushel, grew before; and they are tendering you the benefits of their labors, in the agricultural works of the day. The accumulated experience, and the improvements of centuries, have been registered by the press, and their benefits are tendered to all who will read and profit by them, almost without money and without price. He that will read, may learn.—*(To be continued.)*

NOTICES OF CORRESPONDENCE.

☞ The request of the Secretary of the Home District Agricultural Society, would have been attended to with pleasure, had the notice reached us in time for our October number.

Whitney's Stump Extractor, has been extensively used, we understand, in Washington and Saratoga counties, and highly approved. The price at Troy or Albany is $200—address S. Potter, Waterford, N. Y. The machine requires two yoke of oxen, one to move it and the other to draw the stump, and four men. It extracts green as well as dry stumps, no other digging being required than may be necessary to attach the chain to a root. It will extract from 20 to 100 stumps in a day, according to their size and condition.

Black Barley, &c.—We have received from J. Hamilton, of Newark, N. J. samples of black barley and southern corn, both handsome grain.

Buckthorn.—Our Winchester, Ct. "patron" is informed, that the Buckthorn, for hedges, may be had of J. Hersy Derby, Esq. of Salem, Mass. at $4 per 100, and perhaps at some of the Boston nurseries. A few plants may be had at the Albany Nursery.

Leicester Sheep.—Our Vermont correspondent A. will find notices of these sheep in the Cultivator—of their price and hardness.

Threshing Machines.—We are inquired of, by A. Gugy, Esq. of Quebec, and Enoch George, Esq. of Saddler's Cross Roads, Md. as to the relative value of the Threshing Machines which have been described in the Cultivator. We have spoken of those we have seen in operation with freedom, and we must refer to our paper for our opinions; yet it would be invidious, and an office for which we do not feel qualified, to pronounce definitively which is the best. And it is well to remark here, that a threshing machine, and a horse power to propel it, are distinct articles, and that they are sold separate. Indeed, the horse power will soon, in our opinion, be made subservient to all the stationary purposes of the farm; and we expect, ere long, to lay before our readers, drawings and a description of a stationary horse power, which performs more than a dozen farm operations, and among other, threshes, cleans and grinds the grain, bolts the flour, and cuts the straw, *without the aid of any manual power*, after the grain is delivered to the threshing machine. There are at present no threshing machines made, or on sale, at Albany. We cannot answer Mr. George in regard to *Van Bergen's Cultivator*, further than to say, that they are for sale by W. Thorburn, of this city, and that he sends them to order.

The Sodom Apple Plant, described by Isaac Gibbs, as a pest on the farm, is wholly unknown to us. It is *not* the Canada thistle.

He who kindly shows the right way to a person who has gone astray, is like a man who lights another's candle by his own, which, although it has imparted light to the other. still continues to show him light—its own effulgence being undiminished.

Liberality consists less in giving profusely, than in giving judiciously.—*La Bruyere.*

The discovery of what is true, and the practice of that which is good, are the two most important objects of philosophy.—*Fr.*

CORRESPONDENCE.

LINCOLNSHIRE AND BAKEWELL SHEEP.

Carmel, September 30th, 1837.

JUDGE BUEL—Sir—I wish to tender you my thanks for the favorable notice you have been pleased to take, of my former communications, respecting my Lincolnshire sheep, and believing that things of this nature are both interesting and acceptable to you, I will now give you the weight of wool sheared from these sheep, last spring, and also the weight of car cass of several yearling bucks, which I weighed in the presence of several gentlemen, about three weeks since. I find, by reference to my memorandum book, their weight of fleeces as follows:—

16	imported Lincolnshire ewes,		.....	109 lbs.
1	do	do	2 years old, buck,.....	10
1	do	do	4 years old, buck,.....	8
1	Bakewell or Leicester buck,.....			6
15	Lincoln wether lambs, cross or half bloods,....			101
25	Lincoln ewe	do	do do	153
6	Lincoln buck	do	do do	42
65	sheep of the Lincolns, gave total wool,.....			427 lbs.

Thus giving a fraction over 6 lbs. 9 oz. per head. That you may contrast the difference between my Lincolns, and my other improved sheep, Bakewell and Leicester, and kept in the same manner, which is as follows:—70 ewes, including 6 common or native sheep, 265 lbs. which is a fraction over 3 lbs. 12 oz. per head, giving a difference in favor of Lincolns, of 2 lbs. 13 oz. on the general average per head, besides a better carcass, and a much more hardy constitution.

The weight of yearling bucks, is as follows:—

No. 1,.... 188 lbs.	No. 3,.... 180 lbs.	No. 5,.... 156 lbs.
No. 2,.... 186 lbs.	No. 4,.... 166 lbs.	No. 6,.... 152 lbs.

It is proper to remark, that these bucks have been kept only with a view to their thrifty growth, and not to lay on flesh, by extra feeding with grain of any kind. I think that a number of these sheep, *grown to maturity*, say at three years old, will give 300 lbs. at least in carcass alive.

I have thirteen increase this year, from my full blood Lincolns, which promise to be equal with their originals. The time for sale of bucks has but just commenced; I have already sold several, lambs only, and the prospect seems fair at present, to dispose of all I have to part with this season.

Yours, &c.
LEONARD D. CLIFT.

P. S. Please address Somers Post-Office, Westchester county.

BEANS AND BUCKWHEAT.

Lake County, Ia. 9th Oct. 1837.

J. BUEL, Esq.—Dear Sir—The following simple and easy method of saving a crop of *beans*, is worth the price of ten years' subscription to the Cultivator, to every person that never practised it, who wishes to cultivate that valuable crop. By this method, beans may be planted in a field by themselves, may be pulled while the vines are entirely green; and will be perfectly cured, no matter how wet the weather; and what is more, need not be housed or thrashed until such time as may be convenient.—This is the plan

TO CURE BEANS.

Take poles or stakes, (common fence stakes,) into your bean field, and set them stiff in the ground, at convenient distances apart, which experience will soon show you, and put a few sticks or stones around for a bottom, and then, as you pull an arm-full, take them to the stakes, and lay them around, *the roots always to the stake*, as high as you can reach, and tie the top course with a string or a little straw, to prevent them from being blown off, and you never will complain again, "that you cannot raise beans, because they are so troublesome to save." They are the easiest crop ever raised, to take care of. Try it, and you will then know it, and thank me for telling you of it.

Your friend,
SOLON ROBINSON.

N. B. Buckwheat is the best grain that grows, to keep through the winter in a stack. It's all a notion that it must be thrashed as soon as dry. Stack it—try it—it will keep.

Wellsboro, Tioga co. Pa. Oct. 6th, 1837.

J. BUEL, Esq.—Dear Sir,—I want to say a word upon your article on the manufacture of potato bread, which I perceive, if I do not say at once, must be omitted, which is, that you have not mentioned what I conceive to be of great importance, that *it will make grown wheat make light bread.* It being an unfavorable season for harvesting, my small crop of wheat was injured by growing in the shock; we had some ground, and the bread was heavy and clammy, as is usual with such flour. The next baking my wife mixed in a quantity of well mashed potatoes, the bread was as light as a puff-ball, as white as snow, and deliciously sweet. She tried again without the potatoes, and again we had heavy bread; it would not rise; and again with the potatoes with the same result as at first. The kind of potato we used was the pink eye, which is the most dry and mealy potato we are acquainted with. This, if not already known, may be worth offering to the public, but I could wish you would try it in your own family first.

I want, if I have room, to say a word in controversion of your opinion, "that not even garden vegetables will thrive well many years together on the same ground." I believe I had one side of my garden (which, on account of its being a little more gravelly than the other, was not so well adapted to roots,) in cabbage for eight or ten years, without any sensible diminution in quantity or quality; but then it was manured every year. I may say the same thing too of potatoes. I suppose a piece of ground adjoining my house, very convenient for early potatoes for family use, has had potatoes on for seven out of the last ten years; but alway manured. And it is a standing maxim among our New-England settlers, which my own experience has verified, that the longer you sow or plant onions on the same ground the better crops you get; and I never could get good onions till I adopted their rule. Finding that in the garden I failed oftener than otherwise about eight years ago, I ploughed up and fenced in a slight manner, so that I could take away the fence for ploughing, a small spot of loamy land, perhaps two rod square, and appropriated it entirely to onions. It was two or three years before I got a regular crop; it now scarcely ever fails bringing, I should suppose at least, half as many more onions as we could expect of potatoes off the same ground; but then it is always kept up with one load of short manure every year.

I will only add then, that I feel the most sincere desires for the success of your most useful and ably conducted publication.

Respecfully yours, WM. BACHE, P. M.

REMARK.—There is no general rule without exceptions, and that which rigidly exacts an annual change of crops is of this description. The soil may so abound in the specific food of a species of plant, that it will yield a crop for years in succession, without deterioration. Thus, wheat has been grown twenty-two years in succession in Cayuga, and in other districts; oats and grass for many years in the south part of Erie, in Chautauque; and onions for like periods in Weathersfield. Yet these exceptions do not impair the correctness of the general rule, that the alternation of all crops is favorable to the profits of husbandry. *Our* onions deteriorate the second, and still more the third year, when repeated on the same ground, although highly manured —*Conductor.*

EARLY MAY WHEAT.

Bremo, Fluvanna Co. Va. Oct. 10, 1837.

SIR—In the early part of my agricultural life, I was incredulous as to the necessity of a change of seed, in order to ensure the greatest degree of productiveness in tillage—subsequent experience has convinced me of my error.

Of late years, in this part of Virginia, we have seen some of our favorite kinds of wheat go almost entirely out of use, from gradual and successive failures—while other kinds of inferior quality have taken place of them, in consequence of their superior productiveness, attributable to no other cause, as far as we can see, but having been produced in different soils and other climes.

The early May white wheat of Virginia, which first gave superior character to our flour—and the Mexican wheat, very similar to the early May white, are now rarely heard of amongst our agriculturists. Not doubting that these varieties would be very valuable in any quarter of the wheat raising region of our country where they would be new—and being anxious for the general interest of agriculture, that they should not be lost—as doubtless, after some years acclimating in New-York, they may again be returned advantageously to the south—I have been at some pains to procure a barrel of the first mentioned kind—which I have sent, through Messrs. Peyton, Deane and Edwards, of Richmond, who will forward it through their friends in the city of New-York, John Wilson & Co. to you at Albany. By putting it into the hands of some of your careful farmers I am persuarded they will find it a valuable acquisition. The specimen sent has an appearance of being yellow or red wneat rather than white, but this is owing to its having been raised for a succession of years on red land—upon grey soils it would soon return to its native whiteness —and for the beautiful whiteness, and large proportion of superfine flour to the quantity of grain, we have never found any wheat to equal the early white May until our soils became tired of it.

A few years ago I sent an equal parcel of the Mexican wheat to General Stephen Van Rensselear, with the same object of preserving a valuable variety of the great staple of agriculture. I should be glad to learn that it has been preserved in the hands of your enterprising farmers around Albany.

and recreation for the mind in hours of rest or of leisure; and when the habit of reading is once acquired, its pleasures and advantages become more and more perceptible and enticing, as we advance in useful knowledge. Those who employ their time in their own business, seldom find leisure or disposition officiously to intermeddle in the private concerns of their neighbors. But the mind is as liable to disease as the body, and a diseased mind is far more prejudicial to character and usefulness, than a sickly body. Evil communications corrupt good manners; and bad books, or useless books, are as injurious to the mind and manners, as bad companions are, or as impure air, or obstructed perspiration are to the body. The adage teaches, that a man is known by the company he keeps, and the maxim is true, applied to books as well as men.

Having discussed the affairs of the family, let us go now to the farm:—For after all, our capacity for providing suitably for ourselves and families, and of becoming useful to others, will depend, in no small measure, upon the extent of our pecuniary means, and these means are to be acquired by the profits of our labors upon the farm.

I would premise in the outset, that the business of agriculture has not kept pace with the other useful arts, in the march of improvement, and that it requires all our exertion and enterprise to overtake the spirit of the age. In the other arts of productive labor, the improvements of the last fifty years have been greater in amount than during the preceding century. No man prospers in the mechanic or manufacturing arts, at this day, who treads in the footsteps of his ancestors. By reason of the application of science, and the multiplication and great improvement of labour saving machines, old practices have been superseded by new and better ones—all has there been changed—all improved. A useful discovery in those arts is no sooner made in one country, or in one district, than a knowledge of it is disseminated, by means of the press, through every civilized land, almost with the rapidity of the wind, and it becomes known and adopted wherever it can be useful. But in husbandry, the case has been different. We have, to a ruinous extent, in many parts of the country, persevered in the practices of our fathers, which, though adapted to their time, and the circumstances of a newly settled country, are ill suited to an exhausted soil, or to the present age of improvement. We, too, must call science and the press to our aid, if we would successfully compete in the business of farming, with the well cultivated countries of the old continent, or the highly improved districts of the new one. The agriculture of England has doubled its products in the last sixty years, and the agricultural productions of Scotland, have been more than quadrupled in the same period. In France, men of profound science, have successfully devoted their talents to the improvement of the soil, and the government has efficiently aided their efforts, by the establishment of schools of practical and scientific instruction in husbandry, and by pecuniary aids to her agricultural societies. There, the soil has been improving under the *new* system of husbandry: here, the soil has been deteriorating under the *old* system. The lands of Flanders have been preserved in unimpaired fertility six centuries, and those of China, for more than two thousand years Providence has provided for us too abundant means for perpetuating the fertility of our soils, and has endowed us with capacities of applying them to advantage. We have received the talent. If we hide it, or do not put it at interest, the master will assuredly take from us that which we have, and give it to him who has already much. But the spirit of agricultural improvement *is* abroad in our land. The young farmer, in particular, feels its vivifying influence. It has already done much, and with the aid of agricultural societies, and of agricultural periodicals, which are increasing in numbers and usefulness, its benign influence will soon be manifest in every department of husbandry, and in every section of our country. We have the strength and enterprise of a young nation; and we possess advantages, and enjoy privileges, unknown to any other agricultural people upon the globe. It becomes us, then, to call promptly to our aid, the lights of science, and the diffusive influence of the press, that we may realize the high destinies seemingly allotted to us by a kind Providence.

Allow me to make a farther digression, to speak of a means of improving our husbandry, which is too much neglected, and too often contemned and ridiculed. I allude to what is sometimes, in derision, termed *Book Farming*, but which in reality offers the most substantial facilities to improvement, and the acquisition of wealth. Let us inquire what this book farming is.

A German, by means of study and observation, aided by a long course of practical experience in husbandry, has been able to ascertain the degree of exhaustion in fertility which soils ordinarily undergo, from the growth of common grain crops—and how much their fertility is increased by given quantities of manure, and by pasture—thus teaching how to maintain, or to increase, the fertility of the soil, and consequently its products and its profits, from the resources of the farm.

Other men have been assiduously engaged for years, in studying, and have satisfactorily ascertained, the laws by which heat, air and water, are made to exert their best agency in preparing the food, and accelerating the growth and maturity of plants—and have published directions how to derive the highest advantage from these primary agents of nutrition.

And others have invented new and improved implements and machinery, calculated to relieve agricultural labor of half its toils.

A farmer in Ohio, raises fifteen hundred bushels of Swedish turneps on an acre of ground, enough to feed and fatten ten bullocks seventy-five days. A farmer in Massachusetts, by a new mode of managing his corn crop, has realized a nett profit of $150, on little more than an acre of land, while his neighbors, in the same season, and in adjoining fields, have not been remunerated, in their crop, for the expense of culture. A farmer in New-York, has proved by experiment, that by a new process of making hay, he can save ten per cent in weight, something in labor, and other ten per cent in the quality of his forage. Another farmer of my acquaintance, has cultivated twenty acres of Indian corn, and eight acres of beans the present season;—the former, estimated to average forty bushels the acre, and the latter giving more than an ordinary yield—without employing a plough, or a hand hoe, in the planting or culture—the whole work having been performed with the drill barrow and cultivator, implements of modern introduction, thus economising from one-half to two-thirds of the labor ordinarily bestowed.

These are all matters of recent record, but as they happen to be *printed*, they very properly fall under the denomination of *Book Farming*.—But are they, on this account, less true, or is the information they contain less useful in your practice? If a neighbor makes a palpable improvement, by which he doubles the value of his labor, you readily avail yourselves of his discovery, though you do it by stealth. Through the means of agricultural publications, the entire farming community stand in the relation to you of neighbors—you become acquainted with all their improvements, and are enabled to profit by their skill and science. I might detain you for hours with details of improvements in husbandry, which are essential and accessible to the farmer. Hundreds of men of profound science, and thousands of the best practical farmers, in this and other countries, are engaged in improving agriculture—in making two, three and four blades of grass, and two, three and four bushels of grain grow, where but one blade, or one bushel, grew before; and they are tendering you the benefits of their labors, in the agricultural works of the day. The accumulated experience, and the improvements of centuries, have been registered by the press, and their benefits are tendered to all who will read and profit by them, almost without money and without price. He that will read, may learn.—*(To be continued.)*

NOTICES OF CORRESPONDENCE.

☞ The request of the Secretary of the Home District Agricultural Society, would have been attended to with pleasure, had the notice reached us in time for our October number.

Whitney's Stump Extractor, has been extensively used, we understand, in Washington and Saratoga counties, and highly approved. The price at Troy or Albany is $200—address S. Potter, Waterford, N. Y. The machine requires two yoke of oxen, one to move it and the other to draw the stump, and four men. It extracts green as well as dry stumps, no other digging being required than may be necessary to attach the chain to a root. It will extract from 20 to 100 stumps in a day, according to their size and condition.

Black Barley, &c.—We have received from J. Hamilton, of Newark, N. J. samples of black barley and southern corn, both handsome grain.

Buckthorn.—Our Winchester, Ct. "patron" is informed, that the Buckthorn, for hedges, may be had of J. Hersy Derby, Esq. of Salem, Mass. at $4 per 100, and perhaps at some of the Boston nurseries. A few plants may be had at the Albany Nursery.

Leicester Sheep.—Our Vermont correspondent A. will find notices of these sheep in the Cultivator—of their price and hardness.

Threshing Machines.—We are inquired of, by A. Gugy, Esq. of Quebec, and Enoch George, Esq. of Saddler's Cross Roads, Md. as to the relative value of the Threshing Machines which have been described in the Cultivator. We have spoken of those we have seen in operation with freedom, and we must refer to our paper for our opinions; yet it would be invidious, and an office for which we do not feel qualified, to pronounce definitively which is the best. And it is well to remark here, that a threshing machine, and a horse power to propel it, are distinct articles, and that they are sold separate. Indeed, the horse power will soon, in our opinion, be made subservient to all the stationary purposes of the farm; and we expect, ere long, to lay before our readers, drawings and a description of a stationary horse power, which performs more than a dozen farm operations, and among other, threshes, cleans and grinds the grain, bolts the flour, and cuts the straw, *without the aid of any manual power*, after the grain is delivered to the threshing machine. There are at present no threshing machines made, or on sale, at Albany. We cannot answer Mr. George in regard to *Van Bergen's Cultivator*, further than to say, that they are for sale by W. Thorburn, of this city, and that he sends them to order.

The Sodom Apple Plant, described by Isaac Gibbs, as a pest on the farm, is wholly unknown to us. It is *not* the Canada thistle.

He who kindly shows the right way to a person who has gone astray, is like a man who lights another's candle by his own, which, although it has imparted light to the other, still continues to show him light—its own effulgence being undiminished.

Liberality consists less in giving profusely, than in giving judiciously.—*La Bruyere.*

The discovery of what is true, and the practice of that which is good, are the two most important objects of philosophy.—*Fr.*

CORRESPONDENCE.

LINCOLNSHIRE AND BAKEWELL SHEEP.

Carmel, September 30th, 1837.

JUDGE BUEL—Sir—I wish to tender you my thanks for the favorable notice you have been pleased to take, of my former communications, respecting my Lincolnshire sheep, and believing that things of this nature are both interésting and acceptable to you, I will now give you the weight of wool sheared from these sheep, last spring, and also the weight of carcass of several yearling bucks, which I weighed in the presence of several gentlemen, about three weeks since. I find, by reference to my memorandum book, their weight of fleeces as follows:—

16	imported Lincolnshire ewes,			.....	109 lbs.
1	do	do	2 years old, buck,	.....	10
1	do	do	4 years old, buck,	.....	8
1	Bakewell or Leicester buck,			.....	6
15	Lincoln wether lambs, cross or half bloods,			....	101
25	Lincoln ewe	do	do	do	153
6	Lincoln buck	do	do	do	42
65	sheep of the Lincolns, gave total wool,			.....	427 lbs.

Thus giving a fraction over 6 lbs. 9 oz. per head. That you may contrast the difference between my Lincolns, and my other improved sheep, Bakewell and Leicester, and kept in the same manner, which is as follows:—70 ewes, including 6 common or native sheep, 265 lbs. which is a fraction over 3 lbs. 12 oz. per head, giving a difference in favor of Lincolns, of 2 lbs. 13 oz. on the general average per head, besides a better carcass, and a much more hardy constitution.

The weight of yearling bucks, is as follows:—

No. 1,.... 188 lbs.	No. 3,.... 180 lbs.	No. 5,.... 156 lbs.
No. 2,.... 186 lbs.	No. 4,.... 166 lbs.	No. 6,.... 152 lbs.

It is proper to remark, that these bucks have been kept only with a view to their thrifty growth, and not to lay on flesh, by extra feeding with grain of any kind. I think that a number of these sheep, *grown to maturity*, say at three years old, will give 300 lbs. at least in carcass alive.

I have thirteen increase this year, from my full blood Lincolns, which promise to be equal with their originals. The time for sale of bucks has but just commenced; I have already sold several, lambs only, and the prospect seems fair at present, to dispose of all I have to part with this season.

Yours, &c.
LEONARD D. CLIFT.

P. S. Please address Somers Post-Office, Westchester county.

BEANS AND BUCKWHEAT.

Lake County, Ia. 9th Oct. 1837.

J. BUEL, Esq.—Dear Sir—The following simple and easy method of saving a crop of *beans*, is worth the price of ten years' subscription to the Cultivator, to every person that never practised it, who wishes to cultivate that valuable crop. By this method, beans may be planted in a field by themselves, may be pulled while the vines are entirely green; and will be perfectly cured, no matter how wet the weather; and what is more, need not be housed or thrashed until such time as may be convenient.—This is the plan

TO CURE BEANS.

Take poles or stakes, (common fence stakes,) into your bean field, and set them stiff in the ground, at convenient distances apart, which experience will soon show you, and put a few sticks or stones around for a bottom, and then, as you pull an arm-full, take them to the stakes, and lay them around, *the roots always to the stake*, as high as you can reach, and tie the top course with a string or a little straw, to prevent them from being blown off, and you never will complain again, "that you cannot raise beans, because they are so troublesome to save." They are the easiest crop ever raised, to take care of. Try it, and you will then know it, and thank me for telling you of it.

Your friend,
SOLON ROBINSON.

N. B. Buckwheat is the best grain that grows, to keep through the winter in a stack. It's all a notion that it must be thrashed as soon as dry. Stack it—try it—it will keep.

Wellsboro, Tioga co. Pa. Oct. 6th, 1837.

J. BUEL, Esq.—Dear Sir,—I want to say a word upon your article on the manufacture of potato bread, which I perceive, if I do not say at once, must be omitted, which is, that you have not mentioned what I conceive to be of great importance, that *it will make grown wheat make light bread.* It being an unfavorable season for harvesting, my small crop of wheat was injured by growing in the shock; we had some ground, and the bread was heavy and clammy, as is usual with such flour. The next baking my wife mixed in a quantity of well mashed potatoes, the bread was as light as a puff-ball, as white as snow, and deliciously sweet. She tried again without the potatoes, and again we had heavy bread; it would not rise; and again with the potatoes with the same result as at first. The kind of potato we used was the pink eye, which is the most dry and mealy potato we are acquainted with. This, if not already known, may be worth offering to the public, but I could wish you would try it in your own family first.

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REMARK.—There is no general rule without exceptions, and that which rigidly exacts an annual change of crops is of this description. The soil may so abound in the specific food of a species of plant, that it will yield a crop for years in succession, without deterioration. Thus, wheat has been grown twenty-two years in succession in Cayuga, and in other districts; oats and grass for many years in the south part of Erie, in Chautauque; and onions for like periods in Weathersfield. Yet these exceptions do not impair the correctness of the general rule, that the alternation of all crops is favorable to the profits of husbandry. *Our* onions deteriorate the second, and still more the third year, when repeated on the same ground, although highly manured —*Conductor.*

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SIR—In the early part of my agricultural life, I was incredulous as to the necessity of a change of seed, in order to ensure the greatest degree of productiveness in tillage—subsequent experience has convinced me of my error.

Of late years, in this part of Virginia, we have seen some of our favorite kinds of wheat go almost entirely out of use, from gradual and successive failures—while other kinds of inferior quality have taken place of them, in consequence of their superior productiveness, attributable to no other cause, as far as we can see, but having been produced in different soils and other climes.

The early May white wheat of Virginia, which first gave superior character to our flour—and the Mexican wheat, very similar to the early May white, are now rarely heard of amongst our agriculturists. Not doubting that these varieties would be very valuable in any quarter of the wheat raising region of our country where they would be new—and being anxious for the general interest of agriculture, that they should not be lost—as doubtless, after some years acclimating in New-York, they may again be returned advantageously to the south—I have been at some pains to procure a barrel of the first mentioned kind—which I have sent, through Messrs. Peyton, Deane and Edwards, of Richmond, who will forward it through their friends in the city of New-York, John Wilson & Co. to you at Albany. By putting it into the hands of some of your careful farmers I am persuarded they will find it a valuable acquisition. The specimen sent has an appearance of being yellow or red wneat rather than white, but this is owing to its having been raised for a succession of years on red land—upon grey soils it would soon return to its native whiteness —and for the beautiful whiteness, and large proportion of superfine flour to the quantity of grain, we have never found any wheat to equal the early white May until our soils became tired of it.

A few years ago I sent an equal parcel of the Mexican wheat to General Stephen Van Rensselear, with the same object of preserving a valuable variety of the great staple of agriculture. I should be glad to learn that it has been preserved in the hands of your enterprising farmers around Albany.

The early May wheat will do well sown any time in October, or on very rich land in November. In short, I think it not improbable it would succeed with you as a spring wheat sown in February or March, fully as well as the Florence.

Yours with high regard and esteem

JOHN H. COCKE.

☞ We thank our highly respectable correspondent for the interest he takes in the improvement of the agriculture of our country—of our *whole* country. When the wheat arrives, it will be freely divided with any of our careful brother farmers, who are disposed to give it a fair trial. We have experienced palpable benefits from the change of seed, although we are careful to save the best from our own crop; and the remark applies to fruits as well as to grains and roots. Varieties of the apple and pear, after they have become old and deteriorated in their original district, have been found to renew their healthfulness and vigor on being transferred to a new soil or a new climate. This has been the case with the famed golden pippin of England, the no less famed Spitzenbergh of our neighborhood, and to the Vergaleu or St. Michael's pear. The interchanges of seeds and fruits, between agricultural societies and individuals, should be encouraged, and may result in the highest public benefits.—*Conductor.*

LIVE FENCES.

Willoughby, Ohio, October 15, 1837.

SIR—In your paper this month, you draw attention to a most important subject, the raising of LIVE FENCES; and you invite those who have had experience in this country, in cultivating hedges, to furnish you with facts.

Two years ago, when I first came here, there was an abundant crop of berries on the wild thorns of the country, and I plucked nearly a bushel for seed. These were sown in the spring of 1836; but none of them vegetated that season, and only a few plants have yet appeared. The fault was in want of due preparation by rotting; and you would do well to instruct your readers as to the best mode of effecting this. In Scotland I have seen the berries of white thorn buried in large heaps during winter, sown in spring, and come up the same season abundantly.

You say that after a trial of seven years you have been obliged to give up the European quick set thorn, and substitute native plants, as better adapted to the climate north of latitude 42°—will you be so good as to say in what they were deficient, as several friends of mine in Ohio, have imported plants from England, which, with several years growth are promising well.

Observing the English sweet brier growing luxuriantly in the door-yards of several neighbors here, I gathered some handfuls of the berries twelve months ago, rubbed out the seed in dry sand, and, thus separated, sowed the whole in a hedgerow, which came up in May, and now averages a foot in height. This plant I am convinced may be rendered extensively useful in fencing, either alone or mixed with thorn, locust, &c.; these giving strength to the hedge, while the sweet brier thickens it at bottom. The growth is so rapid that in three years this plant will be six or eight feet high; and if, on a bank, between ditches, two feet deep, or strengthened with a rail supported on posts seven or eight feet apart, will be a tolerable fence. Trial can easily be made in and around gardens; and there, the fragrance of the foliage, with the beauty of the flowers and berries, will alone compensate any trouble or expense. Yours, &c.

ROB. F. GOURLAY.

REMARKS.—We have found no difficulty in growing the haws or seed of the English white thorn; but the seeds of the native crataegus, indigenous in the north, grow badly, and a great portion of them do not grow at all, the haws being abortive, or not well matured. The English white thorn does not succeed, by reason of our dry and hot summers and cold winters—its *natural* climate being humid, and not subject to our extremes of either heat or cold. The sweet brier grows freely from seeds; but the question is yet to be decided whether it will thrive in hedge with the thorn or other hedge plants, it not being strong enough for a hedge of itself.—*Conductor.*

SIOUX, BADEN AND DUTTON CORN—EXPERIMENTS—ITALIAN WHEAT, &c.

Cedar Creek, Plainfield, N. J., 6th Oct. 1837.

J. BUEL ESQ.—MY DEAR SIR.—I am desirous to obtain grass seed free from noxious weeds, comm only called in Connecticut, *spear* or *English grass.* It is indigenous, common to all N. England, esteemed by many, as forming the best pastures, and making the best quality of hay, in distinction from clover, timothy, &c., but I do not know the botanical name. I have supposed it was "poa pratensis,"* and have once ordered it, which proved, on sowing, to be blue grass. Will you be so kind as to direct me, if you understand my wishes? The native grasses here resembling it are of two kinds, one a medium in appearance between N. E. spear grass and red top, the other dwarfish, with a more wide spread top. I have never seen any thing in this vicinity exactly corresponding with Connecticut spear grass. By my remarks you will understand that I am a full blooded Yankee: I have, therefore, a privilege of asking questions: Can you inform me what is *the cause* of smut on corn? I mean the monstrous fungus, protuberances that sometimes shoot out where the ear should be. I planted last spring about an hundred hills of Sioux corn in my kitchen garden, which grew very large, from eight to nine feet high, and generally set for three, and in some instances for four ears; in no case were there but two good ears to a stalk, the others filled out with smut. I also planted a few hills of Baden, corn; the seed was received from H. L. Ellsworth, Esq of Washington city. This kind set from three to nine ears on a stalk, but none had more than five sound ears, the others generally filled with smut. The Baden corn has grown to a great size, about fourteen feet in height. I have not yet gathered it, but counted 117 ears that look sound, on about 140 square feet of ground. This, however, is no criterion for a field crop, as the ground was very rich, and I hoed this and Sioux perhaps a dozen times. I doubt not the latter, if it had not been mostly picked for green corn, would have yielded, being planted three feet each way, more than at the rate of an hundred bushels to the acre—some of the ears reserved for seed, were ten to twelve inches long, twelve rowed, well filled, bright yellow. It was fit for use in August, and is a valuable early corn. The Baden corn I think *will not do* for a field crop in this region.

I tried this season about half an acre of Sioux, Dutton and Connecticut corn, each in the field. Neither were as large as the N. Jersey of early planting. The Sioux and Dutton fell but little short in sound corn, The N. J., I judge, is too late, the stalks too large, which exhausts the soil. I am calculating to plant another year about ten acres of Sioux and Dutton. The former is the earliest and largest. I have tried this season the experiment of a few rows, of about forty-five rods in length, in the centre of a field of N. J corn. First with a compound of two-thirds unleached ashes to one-third plaster, a full handful thrown upon the corn when dropped and immediately covered. Second, a shovel full of good barn-yard manure. Then a handful of ashes alone: next a small handful of unmixed plaster: then a handful of slacked lime: and lastly without any kind of manure. The rows are cut up but not yet husked. The land and cultivation were very equal. Where the compound of ashes and plaster was applied the corn through the whole season was visibly best: next to it was where the ashes were applied. The barn-yard manure and plaster stood about equal: where the lime was put it was inferior to that which had no manure of any kind applied to it. The land was a dark brown loam, resting on a tenacious subsoil. I sowed a few acres of wheat last season late, about the middle of October, to avoid the flies. It was much winter killed, and the flies destroyed about half the residue, so that I think we shall not get more than ten to twelve bushels to the acre. In the spring I sowed about two acres of Italian spring wheat It came up well, and looked very promising, until about the middle of May, when it began to wane. When I examined it there was one to nine larvae at work in most of the stalks. I considered that my crop was lost; but as the land was in good heart, sprouts soon shot up from the roots, and notwithstanding many of them were attacked, yet it came forward well, and yielded a fair crop; by estimation from what we have threshed, about twenty bushels to the acre, of plump grain. The question is settled, in my mind, that the fly is *not confined* to the early part of the fall in depositing her eggs. I expect if the experiments were fully made she would be found to be active from early in the spring to late in the fall.

I would take leave respectfully to suggest the propriety of raising the next volume of the Cultivator to one dollar per annum—as it would then be the *cheapest periodical* I am acquainted with. The object of the suggestion is, to give you the benefit of an assistant, that you might have an opportunity for travelling more to make personal observations, and to give to the Cultivator more embellishment. I do not believe that one to twenty of your subscribers would withdraw or object, as we should all get double the value of the extra expense.

I am very respectfully yours, &c.

DAVID L. DODGE.

* This is believed to be the botanical name of the grass described. We have not noticed the seed for sale in any of our seed shops. It may be gathered at maturity, by children, by stripping it from the culm.

DUTTON CORN.

Philadelphia, Sept. 23, 1837.

HON. J. BUEL.—Dear Sir—Early last spring, you shipped to me, at my request, a box of *Dutton Corn.* I was induced to give it a trial, by the various favorable accounts of it, in the "Cultivator," and the reputation it had otherwise acquired. The result of the trial is accurately stated in the annexed note, and may be relied on. The appearance of the crop in July, so early and so prolific, was gratifying to all who saw it.—The applications for seed are so numerous, that I shall dispose of the whole crop for that purpose. Very respectfully,

W. L. HIRST.

"I planted the Dutton Corn in a thin orchard, of 2½ acres, preparing the ground by ploughing in the green sward and harrowing; no manure was applied. The seed was steeped, and rolled in tar and ashes, and

planted about four and a half feet each way, the first week in May. I used the cultivator twice; on the 4th July, the corn was in silk, and fit for cooking in the first and second weeks of August, but it was suffered to ripen on the stalks, and cut close to the ground early this month. The fodder is very tender and excellent. The yield is about 70 bushels to the acre. The main crop on the farm is the yellow gourd; but the Dutton is far superior: one hill of the Dutton yields more than three or four of the gourd, although the gourd seed was the best that could be procured. The two kinds of corn did not intermix: the fields were remote and the Dutton too early. DAVID BURMAN."

"*Blockley Grove, near Philadelphia, Sept.* 16, 1837."

P. S. I trust you will not cease to press on the public, the expediency of generally raising this species of corn: the crop is admirable, and even astonishing: the field, when the corn was nearly ripe, looked as if it was *all ears!* W. L. H.

NOTE.—We plant 3 by 2½ feet, and get 5,808 hills on the acre. Our correspondent planted about 4½ each way, and had but 2,151 hills. Thus we obtain 3,657 hills, or more than 2½ to his one on an acre; and yet he obtained 70 bushels—without manure. We introduce this comparison to explain to incredulous readers the cause of our northern corn crops being sometimes deemed incredibly large. It is, however, to be borne in mind, that our corn is of comparatively dwarf growth, and will bear crowding more than the southern varieties.

We beg here to remark, that there is a *late* twelve rowed corn, which has been mistaken and sold for the Dutton, particularly in Berkshire co. Mass. It grows stouter and taller than the Dutton, and ripens two or three weeks later.—*Cond. Cultivator.*

TOP DRESSING MEADOWS.

J. BUEL, Esq.—Dear Sir—Your Brookline correspondent, in the October number of the 3d volume of the Cultivator, has made a statement to show that top dressing old mowing land is more profitable than an alternation of crops. He says, there may exist a great error in top dressing grass land, and this error should be corrected, as there is much old mowing land in this region, which cannot conveniently be ploughed. I wish him or some other of your Brookline subscribers, would correct this error, for I think the farmers in that town understand that better than in any other town in this state. I wish they would state what kind of manure, and when applied, whether in the spring or fall. L.

Columbia, Ct. September 18, 1837.

PROPOSED IMPROVEMENTS IN LOOMIS' STEAM BOX.

Sheffield, Mass. Sept 20, 1837.

Mr. J BUEL—Sir—Having examined Mr. Nathan Loomis's plan of steaming vegetables, which we think will meet with the approbation of those who are engaged in fattening pork and beef on potatoes, apples, ruta baga, &c. yet we would recommend the additional improvement of a tube, put through the cover of the boiler, with from one to two feet of it above the cover, and extended down as low in the boiler, as will be safe to suffer the water to be boiled without injuring the boiler, which tube will emit steam whenever the water gets below the end of it, and thereby give warning when the boiler needs replenishing with water. This tube will also answer for a conductor, through which the water may be conveyed into the boiler, and a reservoir of water may be placed above the boiler, with a fasset extended directly over the end of the tube, and gaged so as to emit the water down the tube about as fast as it boils away. We would also recommend the addition of a fasset, put through the cover of the boiler, for the purpose of throwing off the water, when the boiler happens to get filled too full. The cover of the boiler may be fitted so as not to leak steam, by nailing two or three strips of cloth around its edge.

The above named tube may be of any convenient bore, from half inch upwards, and should remain open at both ends. It answers the double purpose of safety valve and feeding tube. Upon this plan, a boiler that will hold one pail full, will steam several bushels at a time, and as quick as the same quantity can be boiled in a large kettle.

The steam pipe may be placed at one side of the cover of the boiler, and answer equally as good a purpose as though it were at the centre, but in no instance should the steam pipe be permitted to extend below the under side of the cover. SHERWOOD HAMILTON.

SPOT IN SPRING WHEAT.

J. BUEL, Esq.—Dear Sir—Permit me to address you at this time, with the hope of eliciting some information as to the cause of the failure of our spring wheat crops in this vicinity, this season. I have carefully searched every volume and number of the Cultivator, to find something to the point, but can find nothing, and have come to the conclusion, that the disease which I am about to mention, is unknown to your correspondents, or if known, communications on the subject are withheld, or possibly some small notice has been given in the Cultivator, and escaped my observation. I must confess, that in the culture of spring wheat, I am yet in my noviciate, and as experience is said to be the best schoolmaster, I trust the lesson that many in this vicinity have received from him will in the end prove to our advantage.

The last summer the small quantity that was sown, did so remarkably well, that it induced many to enter deep into its culture this season. The consequence has been, that by some unforeseen events, much time and labor have been thrown away, and the confidence of many of our farmers in its culture severely shaken.

In the first stages of its growth, it was very promising, but when the grain began to form in the ear, it was observed that what is termed at the east, *blight*, or *blast*, which is here termed the *spot*, had taken rank hold of much of it. Its effect upon the ear of wheat seemed to be, to destroy a part of it, or rather to prevent the production of the grain, while on other parts of the same ear, grains of wheat grew, though very inferior in size and appearance. Again, some ears would be entirely destitute, while others did not seem to be affected in the least. The ear and straw of the diseased and that which was not being perfectly bright and free from rust.

The reason of its being called "The Spot," is derived, I suppose, from the fact, that on its first appearance, the spots upon the ear which is diseased appear to be ripe or of a light color, while that part of the ear that contains a berry remains green, thus presenting in fact a very *spotted* appearance.

Owing to the wintry weather crowding itself into the spring months, we were not able to commence ploughing before the middle of April, and those fields which were sown at different times seemed to be affected more or less, according to the time of sowing. Those which were sown from the 15th to the 25th of April, yield about half a crop, (25 to 30 bushels being the ratio of a common crop,) while fields sown eight or ten days later, were not worth harvesting. Again, fields sown two weeks later than either of the last of these, are better than either of the former, although all were affected more or less. I have made many inquiries of the oldest settlers, and have puzzled my ingenuity to find out the cause, and if possible, for the future to guard against it; and the best information I can obtain is, that it was occasioned by some heavy showers while the wheat was in blossom, thereby destroying the first cause of the reproduction of grain in the ear. To me it appears there is room for doubt on that point. True we had some heavy showers about the time it was in blossom, together with some cool damp weather, which united might have been the occasion of it; but if those causes will produce such effects upon spring wheat, why will not the same cause produce similar effects upon winter wheat, oats, and other small grains, and upon fruit trees in their season? The theory is new to me, but may be old to you, but whether new or old, your opinion is respectfully solicited.

But I perceive that I am getting a little prosy, therefore suffer me in conclusion to say that I do not consider it proper to throw away any theory that promises to promote the public good, or individual welfare, however visionary it may be, until it is thoroughly analyzed and divested of all that is objectionable and false. It is not to be expected from the short time that agricultural interests have attracted public attention, that a perfect uniform system can be introduced throughout our Union, nor is it to be desired; different sections require different systems. But the grand principles, as a science, can be scattered through the whole, and when it has once engaged the public mind, there will be no necessity for relying upon foreign aid for our daily bread, or the manner in which it may be obtained systematically. Possessing all the natural prerequisites, it will be a living and eternal shame, if we do not apply the opportunity to these purposes.

Yours with respect,

T. DUDLEY.

Fairfield, Adams co. Ill. Sept. 25, 1837.

REMARKS.—The subject of blight, mildew or rust, is one upon which doubt and darkness still rest. The prevailing opinion is, that it is a parasytic plant, which feeds upon and exhausts, more or less, the juices of the plant destined to nourish and mature the seed. Experience seems to have demonstrated, however, that the rust is most prevalent in rich, moist grounds, and in those having a level surface, and during warm, close and damp weather. Hilly and undulating surfaces, exposed to the influence of the winds, and moderately rich and clean soils, are most exempt from its attacks. We have been recently advised of an efficient preventive being found, in sweeping a rope over the standing grain, in the morning, for a few times, after wheat had attained its growth. The operation is performed by two men carrying each the end of a rope, walking between the ridges, and drawing the rope across the standing grain. It is a work of no great labor. Its efficacy was demonstrated by the fact, that an adjoining piece, not operated upon, was nearly destroyed by the rust, while this entirely escaped injury.—*Conductor.*

KENTUCKY FARMING

Wilkinson's Cross Roads, Tenn. Sept. 28, 1837.

DEAR SIR—I was up in Kentucky a few weeks ago, and whilst at Frankfort, was pleased to learn that an agricultural paper was about going into publication there, to be conducted by able and qualified managers. I availed myself of the opportunity of subscribing for it, and have duly received all the published numbers. I am pleased with it in all points but

one, and perhaps that fault will not long last. The public advertisements of shoe makers, grocers, lawyers, cap merchants, sign painters, and such local matters, should give place to something more agricultural and general in their nature. I hope the subscription list will soon enable the Farmer to exclude every thing but what appertains to agricultural, manufacturing and commercial interests. The paper, I think, will be liberally encouraged.

I was pleased, too, at the high state of cultivation to which they have improved and now conduct their lands in Kentucky. They have not, as we in Tennessee have, been always struggling to make their country what nature never designed it to be. They have practised the adaptation of their soil to the production of those things which nature intended it to produce. Kentucky, in point of scientific and practical husbandry, as regards thinking about how to make the most profit out of the least labor and the least soil, and then doing what they think about, is far, very far, in advance of Tennessee.

Here, the great object of our land holders is to put in as much as they can possibly save from being destroyed by weeds and grass. There, the object seems to be, to improve the land, by judicious management, so as to make each acre yield annually a more abundant harvest than it did the preceding year.

What will be the necessary results of the different courses of tilling and producing you know full well. Our soil will soon be at least stationary in its value, and the owners cease to grow richer. The other state will continue to become richer in soil, richer in science, richer in mind, richer in dollars, richer in every thing. Our state, as a state, is admirably adapted to grass and stock raising, and whilst many, very many admit, and see the Kentuckians annually growing wealthy by raising such stock as we might raise, and driving, too, some hundred of miles further than we should drive, yet such an apathy prevails—so cotton loving are we—that but few will agree to abandon the latter, and try the other.—Some, however, are manfully arousing from their lethargy, and turning their labors to their true interests. I hope the number will grow.

The hospitality of the farmers of Kentucky is unsurpassed by that of any people I have seen, and I have travelled much in the United States. There is an open frankness of manner, a noble, independent sort of familiarity at once evinced towards a stranger, as foreign from the blustering, swearing, dram-drinking, reckless adventuring of the south, as it is from the cool, calculating, cent per cent policy of the north. I was struck, however, with one trait in all the stock raisers I saw, one only excepted. In asking them the price they set on an animal, I never received a direct answer from any but one man. A second, and still oftener, a third inquiry, was always necessary to procure an answer. This custom I dislike very much. It is no difficult thing to tell the price, or decline the sale; I cannot account for this habit.

I was, however, better pleased at the stock fair in Lexington, than at any thing. The form, the perfect symmetry, the splendid, brilliant colors, the size, the milking qualities of some, and the fattening qualities of other cattle, struck me as so far transcending any thing I had conceived of, that I was completely enraptured. Such an exhibition I should like to see in Nashville, but I doubt whether one so superior in every thing, can be presented in America, or Europe even.

By way of showing you the profitableness of the business there, to the country generally, in the stock counties, I will give you, on the authority of Dr. S. D. Martin, of Clarke county, the following statement:—"In ten miles square of that county, in the year 1834, the cattle exported and sold returned to the raisers one hundred and sixty-eight thousand three hundred dollars, besides sixty-eight thousand dollars more for hogs, and the hemp, mule and horse sales, too." One-half of this ten miles square is thickly set with blue grass, and gives a great profit from its luxuriance. Whilst the race horse spirit is high in Kentucky, I was glad to see, that more than a corresponding number of breeders were deeply engaged in rearing, in improving and exporting the slow, but useful mule. Such utilitarians should and do receive good encouragement Whilst the race horse is comparable to the speculator, the idler, and the worthless, and all are mere leeches, the patient and insulted mule, like the farmer, the mechanic, the laborer, is a producer of such things as others but consume. May the producers increase.

Pardon, my dear sir, this long, tedious letter. When I commenced, I only intended to tell you how to dispose of this five dollar bill, and I find I have written out, at a rapid pace, the entire sheet, and have barely room left to assure you that the Cultivator is popular in Rutherford county, is becoming so elsewhere, that I intend some day to contribute to its columns, and that I am respectfully, your obedient servant,

FRED. E. BECTON.

UTILITY OF APPLES FOR FARM STOCK.

Putnam, Ohio, Oct. 7, 1837.

As I have for many years been an advocate for total abstinence from all intoxicating drinks, I feel much solicitude that our farmers should adopt that principle, have therefore concluded to give you some of my experience in feeding apples. I am a mechanic, and live in this village, but have a small fruit yard. In the winter of 1834 and 5 I purchased a pig of a very good farmer, wt. 75 pounds, say three months old, which I kept the next summer in my fruit yard, and fed on the slop of the kitchen, and the milk of one small farrow cow, until the summer sweeting apples became fit to eat, when I shut it out, except once a day we let it in to pick up what we did not want, which practise we continued until fall, when I shut him in a close pen, and commenced giving him corn, but soon found he did not do so well. I then quit giving corn, and gave him what apples he would eat, with common slop, until about two weeks before I killed him, when I gave him corn, under the belief that it would make the pork harder. I killed him the first week in December, being a little over a year old, when he weighed 343 pounds. The gentleman of whom I got him, fed his well on corn through the summer, letting them run out, and in the fall shut them up and fed corn. He had the six best of the same litter, and killed them one week after I did, when his best weighed 200 pounds. He says he gave me the poorest but one, out of nine the sow had, and killed the six best. So you see that I had 143 pounds of pork more than he had from any one of his, and better pork I never saw. I kept some of it a year and a half, as good as at first. I rung my hog in the spring, a practice I have always found advantageous, as I believe it takes one-third less feed than when not rung. I find, if you let your hogs run where there are too many apples, they chew them for the juice, and do not do so well as when fed regularly what they will eat clean.

The same winter I fed a *small farrow* cow on apples, nearly all winter; she had not had a calf for a year; and still we made all the butter we ate in the family, say seven persons, two of them children. If you turn a cow in where she can get too many at first, it will dry her off, as will *bran* or any other feed; but if you begin moderately, and increase until you give what she will eat regularly, there is, I believe, no better food for cows.

If our farmers can be persuaded that feeding apples to their stock is more profitable than making them into cider, one great obstacle to the adoption of the teetotal pledge will be removed, and the wealth of the country increased by the value of the apples so fed.

HORACE NYE.

BOTTS IN HORSES.

Spottsylvania, Va. Sept. 30, 1837.

Mr. Buel,—Dear Sir,—As I know nothing which I can communicate that would more interest the community than a preventive of botts in the horse, I will give a receipt for the same, and the facts upon which it is founded, that you may satisfy yourself of its virtue. It is only necessary to grease a horse when the bott fly is depositing its eggs to prevent that deposite.

My plan has been to use pot-liquor, or in other words, the liquor in which bacon or pork has been boiled, by dipping a piece of woollen cloth into it, and after wringing it slightly, rub the horse well with it, and particularly the parts of the horse upon which the fly usually deposites its eggs, being always careful to have oil enough on your cloth to give a slight coat of it to the hair of the horse, and no bott-fly will touch him. And to prevent the hatching of the eggs after they are deposited, a greater quantity of oil is necessary, though it may be applied in the same way, for grease an egg and it will not hatch, though it must be well greased with some oil that can be easily rubbed off, to prevent the sticking of the hair together, which might otherwise cause it to come off in batts, and leave the horse naked in spots. A bott was taken from the stomach of a horse, and was kept in a snuff-box, which was filled each day with fresh horse dung, until the bott had changed to the crysalis state, when it was left in the dung, and in a short time it came out the perfect bott-fly. Thus proving that the fly is produced by the bott. And now to prove that the greasing the egg will prevent its hatching. Spit in your hand and put two or three eggs from the horse in it, then press your hands together, so as to exclude the light, and you will find that they will hatch in less than two hours. Then grease the same number of eggs, and if you can hatch them, I know nothing about it. Now these are experiments that can be easily tried, by you or any of your neighbors, and I hope you will try some, and give to the world the result.

Yours truly, JAMES HART.

CHURNING.

There is sometimes considerable difficulty in making butter from cream, owing perhaps to causes not exactly understood; and every dairy woman knows that cases occur in which the manufacture of a good article is impracticable. A friend assures us that in ordinary cases the difficulty is at once removed, and butter of a good quality procured, by the addition of a little *sal aratus* to the cream. We have since tried it when cream proved refractory, and found it to succeed admirably. A spoonful of sal aratus, pulverised, is a sufficient dose for two gallons of cream. After the cream has been churned a proper time, if no signs of butter appear, sprinkle the powered sal aratus over the surface, half at a time, as it is possible no more than half may be required. After churning a few minutes longer, if necessary, add the remainder. The philosophy of the matter, we take to be this;—the alkali of the sal aratus neutralizes the superabundant acid of the cream, and thus produces butter.—*Genesee Farmer.*

EXTRACTS.

DRAINING.

We consider this branch of agricultural improvement all essential to good husbandry; and having experienced great benefit from it in our own practice, though performed, we confess, in an awkward way, we are confident we cannot do a more important service to the readers of the Cultivator, than by laying before them the following practical directions for draining, by GEORGE STEPHENS, who has spent a great portion of his life in directing and managing these operations, and who appears to understand perfectly the principles upon which they can alone be successfully conducted.

The Agricultural Society at Orebro, in Sweden, anxious to introduce without delay, Elkington's system of draining into that kingdom, procured Mr. Stephens, in 1806, to practice and teach it, at an expense of a guinea a day, besides his expenses. So highly were the Swedes pleased with his labors, and of such high value did they consider the improvements to agriculture, resulting from them, that Mr. Stephens was employed, subsequent to his first engagement, to survey and make plans for the drainage and cultivation of about one hundred and eighty thousand acres of wet land in that country. Appended to the work from which we make the following extract, is the report made to the Royal Agricultural Society of Orebro, highly complimentary to Mr. Stephens, and creditable to the Elkington system of draining which he pursued.—*Cond. Cult.*

INTRODUCTION.

The importance of draining, previous to the commencement of any other improvement in agriculture, being acknowledged by every cultivator of the soil, it is of the greatest consequence that these undertakings should be conducted on principles which will insure complete and permanent success. The full advantages of this primary improvement can only be obtained when it is well done. It is, indeed, the mother of all other improvements in land; and, to make it effectual, it is necessary that the qualities of the soil, the nature of the stratification, and the laws that govern the rising and running of water, should all be taken into consideration. Any drainage, not conducted with due regard to these, however apparently successful at first, will, in the end, turn out a complete failure. If the work is executed in an insufficient manner, it will often be attended with more expense to remedy the evil than the first outlay; and the operations being concealed under ground, the defects cannot be discovered until a great loss has been sustained.

If landed proprietors were alive to their own interest, they would assist their tenants, to any reasonable extent, in draining on the best principles and in the most substantial manner; for, when properly executed, it is equally as advantageous to the proprietor as to the tenant; and it must be of the highest importance that the interest of both parties should be combined, by performing the work in a complete and permanent manner, as land that is imperfectly drained can never produce crops, either in quantity or quality, equal to land that has been properly dried.

There are few agriculturists or people employed in draining land, that pay proper attention to the stratification of the earth, to which, and the want of a knowledge of hydraulics, may chiefly be ascribed the many mistakes that happen. The stratification of many districts, more especially in North Britain, is so much broken by volcanic or some other eruptions, that a person unaccustomed to the investigation of the causes from which wetness in land proceeds, has very little chance of discovering it, or of drying the land, without a much greater number of drains than is necessary. It is not my intention, in this essay, to enter upon an elaborate detail of the various systems of draining land which are at present practised in this country; but I shall only endeavor to state, in as plain and concise a manner as the nature of the subject will allow, the necessary rules to be attended to in draining the different kinds of soil, and which I have always found, during the course of my practice, to be uniformly successful.

GENERAL PRINCIPLES OF DRAINING.

Wetness in land proceeds either from rain water lodging on the surface or from subterraneous water confined in the bowels of the earth, which, by its own pressure, forces itself to the surface in the form of springs.—On tenacious clays that are nearly level, wetness is often produced by the first of these causes, but it much more frequently proceeds from the latter It is necessary to be able to distinguish from which of these causes the wetness proceeds, to insure success, (for *surface draining*, when the water is subterraneous, can only alleviate the effect, in place of removing the cause,) to accomplish which, requires no small extent of knowledge of the nature and source of springs.

The earth is composed of strata of very various kinds, which, when applied to draining, may, without regard to their other characteristics, be divided into two classes, viz. *porous* and *impervious*, All those kind of strata, whose less coherent parts receive water freely, and through which it runs with ease, such as rotten rock, gravel, sand, and loamy clays, are called *porous*. On the other hand, tenacious clays, and a certain kind of gravel, having a proportion of clay in its composition which, by binding the small stones together, renders it equally as impervious as clay itself, and such rock as is of a close and compact nature, without any fissures in it, are the principal strata that resist the reception of water, and are therefore called *impervious*. Springs undoubtedly originate from the rain and snow water subsiding through porous strata, till it meets an impervious stratum that presents an obstruction to its further descent, and here forming a reservoir or considerable collection of water, it is thus forced, either to filtrate along such a substance, or rise to the surface, where it oozes out in those different ways that are so frequently met with. When the stratum which contains the water composes part of a hill or rising ground, from which the water has descended, it will force its way to the surface wherever it finds the easiest passage; this is sometimes by a natural outlet, but often this is not apparent, and it is confined so near the surface as to injure it by constant moisture, or by oozing imperceptibly through any small pores in the soil. The great object, therefore, in draining, is to cut off entirely the source of the springs or subterraneous water, which causes the wetness, by flowing over the surface, or being confined beneath it. This was discovered by Mr. Elkington, whose leading principles are, *first*, to find out where the water lies in different soils and situations, and under what circumstances; *second*, to lay out the drains so as most effectually to remove the water; *third*, to make the drains the most perfect for this purpose, either by digging alone, or by digging and afterwards boring in their bottoms with an auger—the chief object being to dry the ground effectually and at the least expense. When the subterraneous water lies at such a depth that the level of the outlet will not admit of a drain being cut so deep, or where the expense would be too great, the auger is used to make bore holes in the bottom of the drain, through which the water rises by its own pressure. The truth of the principles of this system of draining has been proved by the extraordinary results which have attended it, not only in this country, but in others, as will be seen by the annexed account of draining in Sweden. By it not only the land that was intended to be drained, but also springs, wells, and wet ground at a considerable distance, with which there was no apparent communication, have been made dry.* As, however, the whole depends upon the situation of the ground, and the nature and inclination of the strata of the adjacent country, a knowledge of these must be obtained before any of the operations are commenced, which will be fully explained in the following details of the different cases.

DRAINING BOGS AND MARSHES.

The bogs and marshy grounds injured by springs, which form a very great proportion of the wet land of this country, are thought by many incapable of being drained; but however impracticable it may appear, the many thousand acres which have been lately brought into cultivation, not only show that they can be easily drained at little expense, but that when they are made dry, they are, in many instances, more valuable than the lands in their vicinity. It is quite apparent that bogs and marshy grounds originate sometimes from water breaking out of the adjacent heights, in a regular line along their upper side—at other times from springs rising promiscuously over the whole surface, forming generally what are called *welleyes;* but more frequently from both causes conjoined, and forming quagmires, which shake all around, so as to be dangerous for a person to walk across: they are easily distinguished at a distance, by the verdure of the grass around the *welleyes*. Under the peat earth, which varies in depth from five to twenty feet, and, in some instances, more, a bed of clay is sometimes found, and under that, a stratum of sand or gravel; but, in others the whole of the sub-strata is composed of the same substance as the adjacent eminences. The clay bed between the moss and the porous stratum being, in many places, very thin, the pressure of the water in the high ground forces that with which it is connected under the bog through the more porous part of the clay and moss to the surface, forming the appearances just mentioned. Such are the general features of bogs and marshes; nevertheless, in every district of the country, much ground still lies waste from the same cause, although containing no peat, on which the same mode of draining ought to be resorted to.

In draining boggy or marshy ground, the first thing to be considered is the best direction for the outlet, and to ascertain its level; the next thing is to fix the direction in which the drains are to be cut. When the water breaks out on the upper side of the moss, a drain must be carried along the line of the wetness, sufficiently deep to intercept it, with out-

* The author experienced a case of this kind lately in draining some fields for Lord Willoughby de Eresby, in Lincolnshire, where a well, in the possession of the tenant, about a mile distant from the operations, was completely drained.

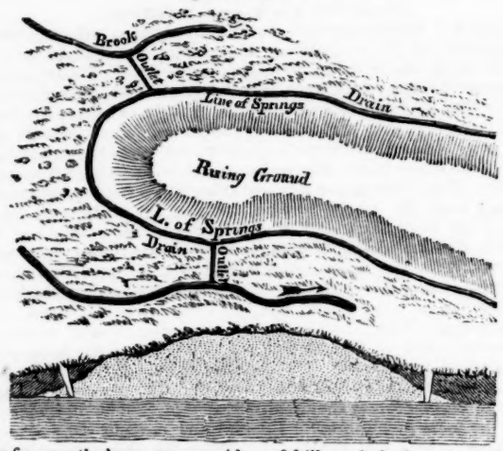
lets to the cross drains, which must be cut such a depth as to suit the level of the outlet. If the extent of land to be drained is considerable, it is advisable to divide the whole by open drains into fields, according to the position of the ground. The drains must be made from five to six feet deep, and when this depth does not reach the bottom of the moss, or to the stratum containing the water, bore holes or wells must be made in their bottom, through which the confined water will rise by its own pressure to the bottom of the drain, so that it will be reduced to the same level. The bore holes are made with an auger about five inches in diameter; but when the mossy or peaty earth is so soft that they will not keep open, wells filled up to the bottom of the drain with small stones must be made. These operations will not only prevent the springs from the adjacent high grounds overflowing the moss, and remove the subterraneous water, but will, also, in most cases, completely free it from surface water proceeding from rain or snow; when, however, any of the latter remains, it must be remedied by wedge or shoulder drains, made from the moss itself, which, if properly executed, and vermin, such as moles and water mice, prevented from injuring them, will last for twenty or thirty years. For a further elucidation of these principles and their details, I beg to refer the reader to the account of the drainages of Afraby and Unger mosses.

DRAINING HILLY AND SLOPING GROUNDS.

Before commencing any operation on land of the above description, it is necessary to examine the quality and inclination of the strata of the adjoining high grounds, and the connection they have with the land to be drained, in order to judge where the water lies. The best way to ascertain the inclination of the strata, is, by examining the beds and banks of the nearest rivers, and any old pits and quarries in the neighborhood, and then sinking pits or boring in the ground to be drained. Rushes and other aquatic plants appearing on the surface may facilitate the investigation, but these being also produced by stagnant water on the surface, where there is no spring, cannot be depended on in cases where more minute precision is necessary.

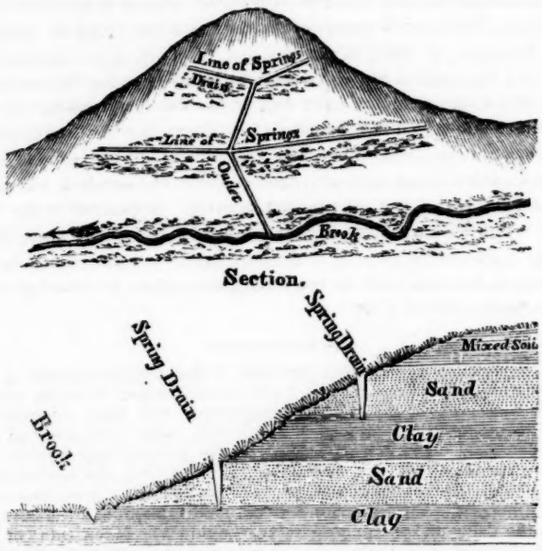
If the *impervious* stratum immediately under the *porous* one, lies horizontally through the hill or bank, the surface of the ground below the level will be wet on both sides of the hill, and the upper side of the wet surface will be found nearly on a level all the way round. When this is the case, and the hill or bank is composed of gravel or rotten rock, a drain properly conducted along one side of the hill will carry off the water that breaks out and causes the wetness on both sides. But if the stratum of which the hill or bank is composed is a substance of a less porous nature, such as very fine sand, through which the water requires a considerable time to filtrate, the drain must be carried round the hill, near the upper side of the wetness, otherwise a complete drainage will not be obtained in wet seasons, when every part of the *porous* stratum is full of water.—(See plan 1—the lower part of the cut representing a cross section.)

Fig. 41.—Plan 1.



It very frequently happens on sides of hills and sloping grounds, that several lines of springs break out and cause wetness to a considerable distance below, with intermediate spaces of dry land between them: in such cases, it is of the greatest consequence to ascertain whether the water causing these lines of wetness proceeds from the same stratum or from several distinct strata. If it is from the first of these causes, which is very seldom the case in hilly lands, the greatest quantity of water will issue from the lowest springs, and in dry seasons the upper ones will be dried up; in this case, the drain should be directed along the lower line of springs, as shown in plan 1, which must be made of sufficient depth to cut off the water from the land below. When, however, the springs come from different strata, having no communication with each other, which most frequently is the case, a drain must be carried along the upper side of each line of springs, as shown in plan 2, deep enough to cut through the porous stratum, or to free the land from superfluous moisture to such a depth as will prevent it injuring vegetation. Sometimes the upper line of springs causes the whole of the wetness below, by the water, after having run over the surface for some distance, sinking into the soil and breaking out again farther down the declivity, or where from the inclination of the ground, it may collect itself. When this happens in a steep bank, and the water gets into the loose earth, it causes the bank to slip, and it therefore is of the greatest importance that this fact should be ascertained before the commencement of the operations, as when such is the case, the drain must be made across the slope farther up than where the water makes its appearance, in the sound ground that has undergone no change; and, if it is made deep enough, the real spring will be intercepted, and the bank secured from slipping.

Fig. 42.—Plan 2.



When the drain has too rapid a descent, and at the same time, it crosses a vein of fine sand which is often met with, the stones with which the conduit of the drain has been laid will be undermined by the rapidity of the current, whereby the whole materials with which the drain has been filled will sink and render it useless in a very short time. In such cases, where there are no open ditches on the sides of the field, to receive the water from the cross drains, the outlet must either be carried obliquely or zigzag down the slope to the under side of the field; or the place best adapted for a watering pond, which ought never to be neglected in situations where there is a scarcity of water.—*(To be continued.)*

[*From Chaptal's Chemistry applied to Agriculture.*]

OF NUTRITIVE MANURES—*Concluded.*

Messrs. Gay-Lussac and Thenard have obtained, by an analysis of the woody fibre, oxygen, hydrogen, and especially more carbon, than from any other part of the plant, and they have determined their several proportions. We know that fermentation carries off much carbon; it is then evident that, by causing the fermentation of the vegetable fibre, the principle which forms its distinguishing characteristic will be gradually diminished, and that it will no longer be a body insoluble in water. It is in this manner that woody plants and the driest leaves are converted into manure.

But as all the solid parts of plants contain fibres which cannot be rendered soluble in water, but by a long period of fermentation; and as it is in the fibre that carbon, a principle so necessary to vegetation, chiefly exists, the fermentation of plants is indispensable to the procuring of the best part of their manure.

The custom of appropriating some crops whilst green to the manuring of the ground, may perhaps be objected to; but I have observed, that in that case the plants are buried in the earth at the time of flowering; and whilst they are succulent, and their fibres soft, and but little formed; and that warmth and the action of water in the earth was sufficient to decompose them, this would not take place if the stalks were dried and hardened by the formation of the grain.

The dung of quadrupeds may be mixed advantageously with the earth at the time of being taken from the stable, if it contain no litter, but if it does, it appears to me better to cause it to undergo a slight fermentation, in order to dispose the straw or leaves of which it is composed to become manure.

It is necessary, in producing the fermentation of dung and litter, to use certain precautions by which the inconveniences arising from the usual mode may be avoided.

Instead of heaping up in large masses the collections of the barn-yard and stables, and allowing them to rot uncovered, and exposed to the changes of weather, they should be placed under a shed, or be at least protected from the rain by a roof of straw or heath. Separate layers should be formed of each clearing of the stables, cow-house, and sheep-pens. These layers should be from a foot and a half to two feet in thickness; and when the heat produced in them by fermentation, rises in the centre to more than 95°, or when the mass begins to smoke, it should be turned, to prevent decomposition from going too far.

Fermentation should be arrested as soon as the straw contained in the heap begins to turn brown, and its texture to be decomposed. To do this, the mass may be spread, or carried into the fields, to be immediately mixed with the soil; or there may be mixed with it mould, plaster, turf, sweepings, &c.

When the dung is not of the usual consistency, as is the case with that of neat cattle during the spring and autumn, it ought to be employed immediately, as I have already stated; but if it be impossible to apply it to the fields whilst recent, it should be mixed with earths or other dry and porous substances, which may serve as manures for the fields destined to receive it.

Upon nearly all our farms the dung of quadrupeds is exposed to the open air, without the protection of a shed, as soon as it is removed from the stables; and is thus washed by the rains, which carry off all the salts, urine, and soluble juices, and form at the foot of the mass a rivulet of blackish fluid, which is either wholly evaporated or lost in the ground. In proportion as fermentation advances, new soluble combinations are formed, so that all the nutritive and stimulating principles of the dung gradually disappear, till there remain only some weak portions of the manure, intermingled with stalks of straw which have lost all their goodness.

To remedy as much as possible an abuse so injurious to agriculture, it is necessary at least to dig a deep ditch to receive all the juices which flow from the dunghill, in order that they may be used in the spring upon the corn or grass lands; or they may be preserved to water the grass lands with, after the first mowing. A large cask, fixed upon a small cart, and which can be filled by means of a hand pump, is sufficient for this purpose. Beneath the tap of the cask must be fitted a narrow chest about four feet long, with the bottom pierced with holes, through which the liquor may be scattered. This mode of watering, when used after mowing, produces wonderful effects upon the crop of the following year.

Before deciding upon the question, whether dung and litter should or should not be made to ferment, it is necessary to take into consideration the nature of the soil to be manured. If this be compact, clayey, and cold, it is better that fermentation should not have taken place, as two effects will be produced by the application of the manure in an undecomposed state. In the first place it will improve the soil by softening and dividing it, so as to render it permeable by air and water; and in the next place it will, whilst undergoing the successive processes of fermentation and decomposition, warm the soil. If, on the contrary, the soil be light, porous, calcareous, and warm, the thoroughly fermented manure, or *short muck*, as it is called by farmers, is preferable, because it gives out less heat, and instead of opening the earth, already too porous, to the filtrations of water, it moderates the flow of that fluid. Long experience has made these truths known to observing, practical farmers.

When it is required to apply dung to any particular kind of soil, it is necessary that it should be used according to a knowledge of its qualities. The dung of animals bearing wool is the warmest; next, that of horses; whilst that of cows and oxen contains the least heat of any.

Soft or fluid animal substances change the most easily; and the progress of their decomposition is rapid in proportion to the diminution of the quantity of earthy salts contained in them. Their decomposition produces an abundance of ammonial gas. This circumstance distinguishes them from vegetable substances, the decomposition of which gives rise to the production of that gas only as far as they contain a small portion of albumen. It is particularly to the development of ammonial gas, which, combined with gelatine, passes into plants, that we can attribute the wonderful effect produced upon vegetation by certain dry animal substances, of which we shall speak presently.

Next to the dung of animals, of which I have just spoken, the urine of horned cattle and of horses is the most abundant manure which can be used in agriculture; and it is not without regret that I see every day so little pains taken to collect it. I have already observed, that in those countries where agriculture is conducted with the most care and skill, all the stables are floored, and the bottoms of them gently sloping, so as to condut all the urine into a reservoir, where the remains of rape seed, flax, wild cabbage, human excrements, &c. &c. are thrown into it to undergo fermentation. In the spring, when vegetation begins to be developed, this fermented liquor is carried into the fields to water the crops.

There are few animal substances of which the nature varies as much as that of urine; the quality of food, or the state of health, produces a sensible change in it. The urine of animals is more or less abundant and active in its qualities, in proportion as their food is juicy or dry. Those which live upon dry fodder give less urine than those which are fed upon green herbage; but that of the first contains a greater quantity of salts than that of the last; and that which is produced directly by drink, contains less animal matter than that which is secreted from the blood by the urinary organs. There are different states of individuals, which may explain satisfactorily the disagreements in the results which have been given, by the numerous analysis which have been made of this fluid.

Mr. Brandt has found the urine of a cow to contain,

Water,	65
Phosphate of lime,	5
Muriate of potash and ammonia,	15
Sulphate of potash,	6
Carbonate of potash and of ammonia,	4
Urea,	5
	100

Messrs. Fourcroy and Vauquelin have extracted from that of the horse,

Carbonate of lime,	11
Carbonate of potash,	9
Benzoate of soda,	24
Muriate of potash,	9
Urea,	7
Water and mucilage,	940
	1,000

An analysis of human urine by M. Barzelius afford,

Water,	933
Urea,	30.1
Uric acid,	1
Muriate of ammonia, free lactic acid, lactate of ammonia, and animal matter,	17.4
	981.5

The remainder is composed of sulphates, phosphates and muriates.

It may be seen from these analysis, that there is a wide difference in the urine of various animals, but that all contain salts which enter into plants, with the water by which they are held in solution; and draw in at the same time those animal portions; which, like urea, are easily soluble, and can be decomposed without difficulty.

Amongst the principles contained in urine, there are some salts undecomposable by the digestive organs of vegetables; such are the phosphate of lime, the muriate and the sulphate of potash. These can serve only to excite and stimulate the organs; but the urea, the mucilage, the uric acid, and other animal matters, must be considered as eminently nutritive. Urine in its recent state, should never be employed as manure; it acts with too much force, and has a tendency to dry the plants; it should therefore be either mixed with water, or allowed to ferment.

Urine is very useful for moistening all those substances which enter into composts; it increases the fertilizing properties of each one of them, and facilitates fermentation of those which need to be decomposed before yielding their nutritive qualities.

Urine, when combined with plaster, lime, &c., forms a very active manure for cold lands.

Bones and horn scrapings have, at the present time, become in the hands of the agriculturist powerful agents in fertilizing the soil. These parts of animals are principally composed of phosphate of lime and gelatine. Those bones which are most usually employed, contain about equal quantities of phosphate and gelatine. The bones of the ox yield from fifty to fifty-five per cent of gelatine; those of the horse from thirty-six to forty; and those of the hog from forty-eight to fifty.

The bones of young animals contain more gelatine than those of older animals, and have a less compact texture. The bones of the feet of the elk, the roe-buck, stag, and hare afford, upon analysis, from eighty to ninety per cent of phosphate.

When bones are to be employed as a manure, they should be ground fine, and thrown into a heap to ferment. As soon as this action shall have commenced, so as to give out a penetrating odor, the mass should be spread upon the earth, and be afterwards mixed with it; or it may be thrown upon the seed, and buried in the ground with it. When seeds are sown in furrows, it is a good method to place some of the ground bones in the furrows with them.

In some countries the fat and a great part of the gelatine are extracted from bones, by boiling them in water, before selling them for agricultural purposes. But by this operation they are deprived of a great part of their fertilizing powers. Upon carefully observing the appearance of a mass of bones under fermentation, I found the surface of a part of them to be covered with a thin coating of an unctuous substance, sharp and biting to the taste. This appeared to me to be formed by the combination of gelatine with ammonia; this last being always developed during the decomposition of all animal substances. The observations of M. D'Arcet, to whom we are indebted for a very valuable work upon gelatine, support this opinion.

It is possible, that, when the ground bones are employed without having been first submitted to the commencement of a fermentation, the gelatine is gradually decomposed in the ground, and the same result at length produced; or, we can conceive that water, acting upon the bones, will dissolve the gelatine, and transmit it to plants; and in both these cases the influence of the bones upon vegetation is very great, whether it be considered as a purely nutritive manure, or in the double connexion of a nutritive and stimulating substance.

When bones are calcined in a close vessel, they yield oil and carbonate of ammonia; the proportion of the phosphate is not sensibly diminished; but the gelatine is decomposod. There remains after the operation from sixty-six to seventy-two per cent of the weight of the bones employed. This residue, broken and pulverized with care, is of great use in the process of refining sugar. After having been used in this process, and become impregnated with ox-blood and animal carbon, I have found it to be one of the best manures which I could employ for trefoil and clover. It should be scattered with the hand upon the plants, when the vegetation begins to be developed in the spring.

Some of the dry parts of animals, as the horns, hoofs, and claws approach closely to bones in the nature of their constituent principles; but the proportions of these vary prodigiously. In such parts, gelatine constitutes the largest portion; and for this reason they are more esteemed as manure than the bones. M. Merat Guillot has found but twenty-seven per cent of phosphate of lime in the horn of a stag, and M. Hatchett, by an analysis of five hundred grains of the horn of an ox, gained only one-fifth part of earthy residuum, of which a little less than one half was phosphate of lime.

The clippings and parings of horns form an excellent manure, of which the effect is prolonged during a succession of years, owing to the difficulty with which water penetrates them, and the little tendency they have to ferment.

A very good manure is likewise formed from wool. According to the ingenious experiments of M. Hatchett, hair, feathers, and wool are only particular combinations of gelatine with a substance analogous to albumen; water can only dissolve them by means of fermentation, which takes place slowly, and after a long time.

One of the most surprizing instances of fertile vegetation that I have ever seen, is that of a field in the neighborhood of Montpelier, belonging to a manufacturer of woollen blankets. The owner of this land causes it to be dressed every year with the sweepings of his workshops; and the harvests of corn and fodder which it produces are astonishing.

It is well known, that the hairs of wool transpire a fluid which hardens upon their surface, but which possesses the property of being easily soluble in water. This substance has received the name of animal sweat; the water in which wool has been washed contain so much of it, as to make it very valuable as a manure.

I saw, thirty years since, a wool merchant in Montpelier, who had placed his wash-house for wool in the midst of a field, a great part of which he had transformed into a garden. In watering his vegetables he had used no other water than that of the washings; and the beauty of his productions was so great, as to render his garden a place of general resort. The Genoese collect with care, in the south of France, all they can find of shreds and rags of woollen fabrics, to place at the foot of their olive trees.

According to the analysis of M. Vauquelin, this animal sweat is a soapy substance, consisting of a base of potash, with an excess oily of matter, and containing, besides, some acetate of potash, a little of the carbonate and of the muriate of the same base, and a scented animal matter.

The dung of birds is another very valuable manure; differing from that of quadrupeds in the food's being better digested; in containing more animal matter, being richer in salts, and affording some of the principles which are found in the urine of four footed animals.

The dung of those sea-fowls, which are so numerous in the islands of the Pacific ocean, and of which the excrement furnishes an important article of commerce with South America, as, according to the accounts of M. Humboldt, they import into Peru fifty shiploads of it annually, contains, besides a great quantity of uric acid partly saturated by ammonia and potash, some phosphate of lime, of ammonia, and of potash, as well as some oily matter. Davy found the dung of a cormorant to contain some uric acid.

The good effects resulting from the use of pigeons' dung, in our country, has caused it to be carefully collected. One hundred parts of this, when fresh, yielded to Davy twenty-five parts of matter soluble in water, whilst the same, after having undergone putrefaction, gave but eight; whence this able chemist concluded with reason, that it was necessary to employ it before being fermented. This is a warm manure, and may be scattered by the hand before covering the seed; or it may be used in the spring upon strong lands, when vegetation appears languid.

The excrement of the domestic fowl approaches nearly in its qualities to that of the pigeon, without, however, possessing the same degree of power. It contains also some uric acid, and may be applied to the same purposes as pigeons' dung.

In the south of France, where they raise many silk-worms, they make great use of the larvas, after the silk has been spun from the cocoons. They are spread at the foot of the mulberry and other trees, of which the vegetation is in a languishing condition; and this small quantity of manure reanimates them surprisingly. Upon distilling some of these larvas, I found more ammonia than I have ever met with in any other animal matter.

Night soil forms an excellent manure; but farmers allow it to be wasted, because it is too active to be employed in its natural state, and they know not how either to moderate its action, or to appropriate it during different stages of fermentation to the wants of various kinds of plants.

In Belgium, which has been the cradle of enlightened agriculture, and where good modes of cultivation are continued and constantly improved, they make astonishing use of this kind of manure. The first year of its decomposition, they cultivate upon the soil to which it is applied, oleaginous plants, such as hemp and flax; and the second year sow the land with corn. They likewise mix water with urine, and use it to water the fields in the spring when vegetation begins to unfold. This substance is likewise dried and scattered upon fields of cabbage.

The Flemings value this kind of manure so much, that the cities set a high rate upon the privilege of disposing of the cleansings of their privies; and there are, in each one of them, sworn officers for the assistance of those who wish to make purchases. These officers know the degree of fermentation suited to each kind of plant, and to the different periods of vegetation.

We shall find great difficulty in bringing this branch of industry to the same degree of perfection amongst us, that it has arrived at in Belgium, because our farmers do not realize its importance, and have a repugnance to employing this kind of manure. But could they not collect carefully all these matters, mix them with lime, plaster, or gravel, till the odor was dispelled, and then carry the whole upon the fields?

Already, in most of our great cities, the contents of the privies are used for forming *poudrette;* this pulverulent product is sought for by our agriculturists, who acknowledge its good effects; let us hope, that, becoming more enlightened, they will employ the fecal matter itself, as being more rich in nutritive principles, and abounding equally in salts; they can easily govern and moderate the too powerful action of this, by fermentation, or what is still better, by mixing with it plaster, earth, and other absorbents, to correct the odor.

As dunghills are the riches of the fields, a good agriculturist will neglect no means of forming them; it ought to be his first and daily care, for without dung there is no harvest. The scarcity of dunghills, or what is the same thing, the bad state of the crops, sufficiently proves the prejudices, by which the peasant is every where governed; and the habitual blindness with which he proceeds in his labors. In our country many of those who cultivate the land, know only the kinds of straw which are suitable for furnishing manure, and in a dunghill of litter, consider them as acting the principal part, whereas they are only feeble accessories.

According to the experiments of Davy, the straw of barley contains only two per cent of substance soluble in water, and having a slight resemblance to mucilage; the remainder consists entirely of fibre, which can be decomposed only after a long time, and under circumstances calculated to facilitate the operation.

I do not believe that there is in the whole vegetable kingdom, an aliment affording so little nutriment, either for plants or animals, as the dry straw of grain; serving only to fill the stomachs of the latter; and furnishing to the former but about one hundredth part of its weight of soluble manure.

Weeds, leaves of trees, and all the succulent plants which grow so abundantly in ditches and waste lands, under hedges, and by the road side, if cut or pulled when in flower, and slightly fermented, furnish from twenty to twenty-five times more manure than straw does. These plants, carefully collected, furnish to the agriculturist an immense resource for enriching his lands. Besides the advantage arising from the manure furnished by these plants, the agriculturist will find account in preventing the dissemination of their seeds, which, by propagating in the fields, deprive the crops of the nourishment of the soil. The turf, that borders fields and highways, may be made to answer the same purpose, by cutting it up with all the roots and the earth adhering to them, rotting the whole in a heap, and afterwards carrying the mass upon the fields, or what is still better, by burning it, and dressing the land with the products of the combustion.

If straw did not serve as beds for animals, and did not contribute, at the same time, to their health and cleanliness, it would be better to cut the ears of corn and leave the stalks in the fields; since they serve only as absorbents of the true manures.

It is always said that barn-yard manure, besides its nutritive virtues, possesses the advantage of softening hard lands, and rendering them permeable by air and water. I do not deny the truth of this: I even acknowledge that it owes this property almost entirely to the straw which it contains; but the same effect would be produced by burying the straw upon the spot.

Besides the characteristic of providing plants with food, the various kinds of dung possess other qualities, which add to their fertilizing powers. Dung, as it is applied to the ground, is never so much decomposed as to have ceased fermenting; and from the moment it is mixed with the soil it produces in it a degree of warmth favorable to vegetation, and serving to guard the young plants against the effects of those sudden returns of cold in the atmospheric temperature, which are so often experienced. On account of the viscous fluids which it contains, dung is not easily dried, unless it be in contact with the air. It therefore preserves the roots of the plants in a state of moisture: and supports vegetation at those periods when without it, plants would perish from drought. It likewise contains many salts which are transmitted by water to plants, serving to animate and excite their functions. The various kinds of dung, mixed with earth, may be considered in the light of amendments to the soil; and in this view they ought to vary according to the nature of the earth to be improved. Compact soils require to be separated and warmed; they require, then, those manures which have been but slightly fermented, and that are the richest in salts. Calcareous and light earths require oily manures, which decompose slowly, and can retain water for a long time, to furnish it to the wants of plants in seasons of drought.

It is by separating these principles, that we may be able to appropriate the various kinds of manure to each species of soil and plant; the attention of agriculturists is already directed, upon this point, to the composition of mixtures of manures, called composts. These are formed by arranging, one above another, beds of different kinds of manure, taking care to correct the faults of one by the properties of another, in such a manner as to produce a mixture suited to the soil to be enriched by it.

For example, if it be required to form a compost for a clayey and compact soil; the first bed must be made of plaster, gravel, or mortar rubbish; the second, of the litter and excrements of horses, or sheep; the third, of the sweepings of yards, paths, and barns, of lean marl, dry and calcareous; of mud deposited by rivers, of the fecal matter collected upon the farm, the remains of hay, straw, etc , and this in its turn must be covered with a laying of the same materials as the first. Fermentation will take place first in the beds of dung, and the liquor flowing from these will mingle with the materials of the other layers; when the mass exhibits the signs which I have pointed out, as indicating decomposition to be sufficiently advanced, it must be carried into the fields, care being first taken to mix well the substances composing the different layers.

If the compost be designed to manure a light, porous, and calcareous soil, it must be formed of materials of a very different character. In this case it is necessary that argillaceous principles should prevail; the substances must be compact, the dung of the least heating kind, and the fermentation contiued, till the materials form a yielding and glutinous paste; the earths must be clayey, half baked, and pounded, or consisting of fat and argillaceous marl, and mud from the sea coast. Of these all the layers must be formed.

By following these principles in my operations, I have completely changed the nature of an ungrateful soil in the neighborhood of one of my manufactories. Over this soil, composed of calcareous earth and light sand, I spread, during several years, some calcined clayey earth; and this land, upon which I could formerly raise only stone fruit, has become adapted to fruit containing kernels; and produces excellent wheat, whereas before it bore only scanty crops of oats and rye.

Young Men's Department.

THE HUSBANDMAN.

There is one prevailing error among this class of society, which ought to be eradicated and destroyed—it is more fatal to the business of agriculture than the growth of Canada thistles, or the destruction of May frosts —we mean the neglected education of the farmer's children. It is frequently remarked, that education is of little use to the farmer; a very little science will do for him. Great knowledge is only beneficial in the professional man. Expressions of this sort are founded upon a false estimate of one of the most useful and elevated professions of life.

If the habitual business of the cultivator does not afford the mental powers a field for their most extended exercise, we know not where to look for such a field. The study of agriculture unites to the theory of science, the very essential material of its practical parts It make the study experimentally and truly learned.

Nearly all that is useful in our pilgrimage through life is drawn from the earth. The main use of science is to explore the minutiæ of nature, to fathom its secret caverns, and to bring forth the hidden possessions of the earth into comprehensible identity. Where, then, is the occupation that so richly furnishes a perpetual supply of mental food as that of agriculture. In the constant exercises and every day labor of the farmer, the business of his science is progressing, if his intellect has been set right in the education of his youth. The theory is all essential, for this constitutes the implement by which he is to prosecute the study of human nature to its practical utility.

A man cannot go forth upon the land with any good degree of promise in scientific experiment, without the light of past experience upon his pathway, and this he can only obtain by a passage through the literary institutions of the country, where the results of the labors of the learned for ages are collected together, and made accessible to the student. To attempt a prosecution of the sciences independent of the past experience, as we sometimes incline to consider ourselves, would be vain. There is scarcely a valuable discovery of modern times, but has borrowed something of its proportions or utility from the mind of antiquity.

That the farmer, by a scientific cultivation of his land, can increase to a very great extent its productions, there does not exist a rational doubt. And that the time is coming when there will be actual necessity for this increase of production, there is every appearance. It is, therefore, not only wise and expedient to commence or carry on now, but it is a high duty which is owed to posterity, in consideration of all the blessings which past ages have bequeathed us.

Permit us, therefore, in our humble way, to impress upon the minds of the farmers the very great usefulness of education Give your sons and daughters not the less education, because you design them for rural life and agricultural pursuit. If you are able, educate them—they will find abundant employmant for all their science, though their farms be located in the deep wilderness of the west; though they be cast amid barren rocks and sterile sand plains, science will aid them there.

Not a blade of grass nor a spear of grain but will grow better under the cultivation of intellectual care. Not a flower, but will show beauties to the eye of science, which the vulgar world knows not of. Not a vine but rears finer, and produces more, where educated hands superintend its growth. In short, all nature is beautified, improved and bettered, where the cultivator is no stranger to its properties and the science of its developments.

Farmers, give your children education. It is the only earthly inheritance you can bequeath them, that is beyond the reach of accident. All other human property is constantly changing and transitory. Science is not transferable—not like the mutability of other goods, negotiable. Firm and unshaken by human vicissitude, it will be the enduring companion of your children through life, it will support them in all the afflictions of Providential chastisement, and prepare them for an inheritance in that undiscovered country beyond the land of death.—*Troy Whig.*

Department of Health.

HINTS TO THE YOUNG OF BOTH SEXES.

[*Extracts from Johnson's Economy of Health.*]

FOURTH SEPTENNIAD—(21 to 28.)

Typical representation of time.—Time should rest on a winged globe, the emblem of eternal revolution and motion, while typical of that which has neither beginning nor end. From his right hand he is profusely scattering the principles and materials of regeneration and life—with his left hand he is scathing, consuming, and obliterating every thing which he had previously called into existence, at the command of his superior! But between the cornucopiæ and the scythe—between the right hand and the left of this mysterious agent, there exists a fair and ample field, for ever flourishing in perennial vigor. The influx of supply, and the efflux of waste are imperceptible to the eye. Parts are constantly added, and parts are constantly subtracted; but the whole remains a whole. The body of nature is ever changing, but never changed. And, as to the human race, though the individual dies, the species remains immortal. The individua constitution exhibits for a time this remarkable condition: During many years, say from the age of thirty to that of forty,—every particle that is taken from the material fabric is simultaneously replaced by another particle of new matter, and thus the living machine is secured from the effects of wear and tear—till the adjusting balance is deranged, and the supply becomes inadequate to the waste.

Majority attained and manhood gained.—To the slave imprisoned in the dark Peruvian mine—to the shipwrecked mariner on the desolate isle, eyeing, from day to day, the boundless horizon in search of a friendly sail —the wheels of TIME do not appear to revolve more slowly than they do to the MINOR approaching his MAJORITY at the close of the third septenniad. The happy morn at last arrives that stamps the minor a man—that liberates him from the control of parent or guardian—that makes him his own master—too often the slave of his own passions, or the victim of designing sycophants! On this, as on many other eventful periods of our lives, the greatest apparent GOOD frequently turns out to be the greatest EVIL—and that which seems at the moment to be a dire misfortune, not seldom eventuates in a most fortunate dispensation.

Phases of life.—Up to this point the supply is greater than the waste, and increase of strength, if not of stature, is the result. In the middle of the fourth septenniad the balance is nearly equipoised—and nature only lends her aid to sustain the equilibrium for many years afterward. But it is in the power of man himself to abridge or extend the period of equilibrium in a most extraordinary degree. The period of this adjusted balance, (say

from 28 to 42) is not so very strictly limited as the period between birth and maturity. At the age of forty-two, the summit of the arch of life is gained—and thence it gradually descends. But this keystone of the arch is not so fixed as the keystone of growth at the age of 24 years. By intemperance, by misfortune, by hereditary or accidental diseases, the individual passes his meridian at thirty-five, or even sooner, instead of reaching the meridian of forty-two. Nature too, who is always indulgent to those who obey her dictates, will sometimes, though rarely, protract this middle period to fifty years; but it is in the succeeding period of declension from the meridian that the greatest latitude or variety is observable. After the completion of the seventh septenniad,—forty-nine years—indulgent nature gives a comparatively unlimited scope to the powers of life—at least till the end of the twelfth septenniad—eighty-four—when it seems that, except on very extraordinary occasions, she determines that those who have arrived at that advanced age shall have only a probability (to use the language of the insurance office,) of three years and a half of—DECRIPITUDE!

Difference between males and females.—At the beginning of the fourth septenniad, the female is as much matured in constitution as the male at the middle of the same epoch—but neither the one at twenty-one, nor the other at twenty-four years, is at the acme of *strength* and *firmness* in organization. The human frame will have acquired its ultimate healthy dimensions, but not its solidity and full power of bearing labor and fatigue, till the age of twenty-four in the one sex, and twenty-eight or thirty in the other.

The fourth septenniad the most critical for both sexes.—The fourth septenniad, then, is perhaps the most critical and dangerous for both sexes in the whole series—as far as health and happiness are consigned. The HEALTH of the male sex is more periled—the HAPPINESS of the female—if indeed it be possible that one of these conditions can be damaged without the participation of the other!

Exercise and temperance.—I have already observed, that about the middle of the fourth septenniad, (24 or 25) man arrives at the limit of physical development; but it is rather the acme of dimensions than of density—of structure rather than of strength. During the latter years of growth, especially if it be rapid, nature appears to be, in some degree, exhausted by the effort of completing the fabric, and requires a temporary economy rather than a profuse expenditure of her powers. The human tabernacle, like other tenements of clay, is much better for a few years seasoning and settlement after the building is completed. The tall and full grown pine is too soft and succulent to be formed at once into the giddy mast, and bend elastic to the sweeping gale.

A stock of temperance and exercise, laid in at this period, will return fifty per cent more of profit in the course of life, than if attempted at any other epoch subsequently. *Temperance* not only conduces *directly* to the consolidation of the constitutional edifice just completed, but proves one of the best bulwarks against some of the most fatal rocks on which health and happiness are often wrecked in riper years.

Exercise, at this period, not only co-operates with temperance in the invigoration of the body, but powerfully controls those effervescences of temperament, and tides of exuberant energy, that so often burst their proper boundaries, and hurl the youth impetuously along,

"In pleasure's path, or passion's mad career."

When the poet apostrophized the good fortune of those who crown a "youth of *labor*" with an "age of *ease*," it is clear that by the term *labor* he meant industry—and by *ease* independence. But the literal acceptation of these significant words is even more applicable than the metaphorical. Exercise, in the early years of life, is more certainly followed by freedom from pain, in the advanced epochs of existence, than economy is followed by competence—or, in the words of the poet—labor by ease. If the youth could see, as the physician daily sees, the exhorbitant USURY which habitual indulgence in pleasure and sloth pays in the sequal—and that, too, not in money, which is dross, but in bodily and mental suffering, (the only penalty that will be accepted,) he would shudder at the prospect—dash the cup from his lips—and tug at the oar of industry like the meanest peasant.

Danger of indolence.—The fourth septenniad is not perhaps the most proper period for repressing the passions of ambition or avarice, and of encouraging exercise of body and relaxation of mind. The love of pleasure has not yet experienced the slightest check from rivals that are, at a future day, to overwhelm and annihilate it; but indolence is apt to insinuate itself between love and ambition in this period of life, and, having once got the mastery, may injure and even incapacitate the individual, by gradually sapping the moral and physical energies before they are completely developed.

Matrimony.—The fourth septenniad is claimed, in an especial manner, by Hymen—Cupid having been for some years previous in the field as pioneer. The most proper age for entering the holy bands of matrimony has been much discussed, but never settled. I am entitled to my opinion, and although I cannot here give the grounds on which it rests, the reader may take it for granted, that I could adduce, were this the proper place, a great number of weighty reasons, both moral and physical, for the dogma which I am going to propound. The maxim, then, which I would inculcate, is this—that matrimony should not be contracted before the first year of the fourth septenniad on the part of the female, nor before the last year of the same in the case of the male. In other words, the female should be, at least, twenty-one years of age, and the male twenty-eight years. That there should be seven years difference between the ages of the sexes, at whatever period of life the solemn contract is entered upon, need not be urged, as it is universally admitted. There is a difference of seven years, not in the actual duration of life of the two sexes, but in the stamina of the constitution, the symmetry of the form, and the lineaments of the face. The wear and tear of bringing up a family might alone account for this inequality—but there are other causes inherent in the constitution, and independent of matrimony or celibacy.

In respect to early marriages, so far as it concerns the softer sex, I have to observe that, for every year at which the hymenial knot is tied before the age of twenty-one, there will be, on an average, three years of premature decay of the corporeal fabric, and a considerable abbreviation of the usual range of human existence. It is in vain to point out instances that seem to nullify this calculation. There will be individual exceptions to all general rules. The above will be found a fair average estimate.

On the *moral* consequence of too early marriages, it is not my intention to dilate; though I could adduce many strong arguments against, and very few for the practice. It has been said that "matrimony may have miseries, but celibacy has no pleasures." As far as too early marriage is concerned, the adage ought to run thus—marriage *must* have miseries, though celibacy *may* have no pleasures.

[*Note.*—We ought before to have remarked, that the extracts we make from the *Economy of Health* are not continuous, but detached paragraphs—and comprise but a small portion of the chapters from which we extract. We can heartily recommend the volume to the reader, as richly worth the seventy-five cents he will have to pay for it to the bookseller —*Cond.*]

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Beans white, bush.....	2 00.. 2 25	1 37.. 1 75	1 37..1 62	1 25..1 50
Beef, best, cwt.....	6 00.. 7 50	5 00.. 6 50	7 00..8 00	6 00..
Pork, per cwt.....	8 00..10 00	7 00.. 9 00	8 00.11 00	7 00..
Butter, fresh, pound, ...	18.. 22	20.. 25	14.. 18	20.. 25
Cheese, pound, ...	7.. 10	8.. 9	9.. 10	9.. 10
Flour, best, bbl.....	8 37.. 9 00	8 00.. 9 00	8 50..9 00	8 75..9 00
GRAIN—Wheat, bushel, ..	1 30.. 1 70	....	1 70..1 87	1 50..1 80
Rye, do. ..	91.. 1 00	1 25.. 1 33	95.. 96	.. 85
Oats, do. ..	40.. 50	75.. 78	.. 43	32.. 34
Corn, do. ..	1 04.. 1 06	93.. 1 06	1 02..1 03	93.. 98
SEEDS—Red Clover, lb...	13	15.. 16	9.. 11	7½.. 8½
Timothy, bushel,.	1 82.. 2 00	2 75.. 3 00	1 25..2 00	3 50..4 00
WOOL—Saxony, fleece, lb.	75.. 80	50.. 55	65.. 73	40.. 50
Merino, lb..... .	50.. 68	45.. 47	45.. 50	25.. 40
1-4 and com. lb...	40.. 50	30.. 33	40.. 44	28.. 30
Sheep, ...	2 50.. 5 00	1 67.. 3 00		
Cows and Calves,.....	22 00..42 00	23 00..42 00		30 0..40 0
Cotton,.....	8.. 12	....	9.. 12	10.. 12

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